



Socioeconomic aspects of ancient Egyptian private tomb construction

A study on New Kingdom tomb volumetrics as economic markers

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Socioeconomic aspects of ancient Egyptian private tomb construction

A study on New Kingdom tomb volumetrics
as economic markers

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Summary

In the period from about 1550-1295 BCE, Egypt established itself as the dominant political power of a large geographical area, spanning from the region of modern day Aleppo in Syria in the north to the fourth cataract of the Nile in Sudan in the south. During the same period there was a marked increase in private tomb building in the Theban necropolis near modern day Luxor. The present dissertation investigates the socioeconomic parameters of the private tomb construction based on the volumetric size of individual tombs. By comparing the archaeological data with the ancient Egyptian textual material, which documented the construction process, a new approach for utilising the vast and largely unexplored volumetric data from Egyptian rock-cut tombs in economic studies is suggested. After having described the theoretical background and method for obtaining the archaeological data, the process of tomb construction is explored through two case studies. One is based on a collection of papyri from the 20th Dynasty necropolis of Saqqara, the other on a collection of ostraca from 18th Dynasty Theban necropolis and the rock-cut tombs, the construction of which is described within the ostraca. The case studies are then compared to a statistical analysis of volumetric size of tombs in the Theban and Amarna necropoleis. Here, the titles, pertaining to the ancient Egyptian administration, of certain tomb owners are also analysed to establish their social standing and economic capability.

Resumé

I perioden fra ca. 1550-1295 BCE etablerede Egypten sig som den dominerende politiske magt i et stort geografisk område, der strakte sig fra regionen omkring den moderne by Aleppo i Syrien i nord til Nilens fjerde katarakt i Sudan i syd. I den samme periode var der en markant stigning i konstruktionen af private grave i den thebanske nekropol ved den moderne by Luxor. Denne afhandling undersøger de socioøkonomiske parametre for privat gravkonstruktion baseret på rumfanget af den enkelte grav. Ved at sammenligne det arkæologiske datasæt med tekstmateriale fra oldtidens Egypten, som dokumenterer konstruktionsprocessen, foreslås en ny tilgang til at anvende den enorme og stort set uudnyttede mængde af rumfangsdata fra egyptiske klippegrave i økonomiske studier. Efter at have beskrevet den teoretiske baggrund og metoden til at opnå det arkæologiske datasæt, bliver processen for gravkonstruktion undersøgt gennem to casestudier. Ét er baseret på en samling af 20. dynastis papyri fra nekropolen i Saqqara, mens det andet er en gruppe ostraka fra den thebanske nekropol og de klippegrave som beskrives i de selv samme tekster. Disse casestudier bliver efterfølgende sammenlignet med en statistisk analyse af rumfanget af grave fra den thebanske nekropol og Amarna. Samtidig bliver visse gravejeres titler relateret til den egyptiske administration også analyseret for at etablere deres sociale rang og økonomiske formåen.

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Introduction

1.1 - Aim and scope of the project

The aim of the thesis is to investigate the relationship that exists between the volumetric size of 18th Dynasty Theban private tombs and the socioeconomic reality of ancient Egyptian tomb construction. At the same time, the thesis seeks to develop a method for utilising the private rock-cut tombs of the Theban necropolis as a primary data source in economic studies of ancient Egypt. In order to achieve these goals, the thesis investigates and analyses the interplay between textual material and archaeological data.

The approach is twofold, in that the thesis will study tomb construction in the 18th Dynasty in a diachronic perspective and relate this to the ancient Egyptian economy. This means establishing a construction scale baseline for the 18th Dynasty Theban private tombs, which, together with subsequent analysis, will reveal the quantifiable numbers relating to the economic structures of that period and place. I will also contextualise this material with New Kingdom work journals and progress reports, as well as with documents with economic significance for the production of tombs. In doing so, I will attempt to define and describe the parameters of the expenditures involved in constructing a New Kingdom tomb. These parameters involve economic cost in terms of materials used, manpower available, and the organisation and planning stages behind the actual construction.

One tomb owner in particular stands out: Senenmut, who had not one, but two tombs build, and, more importantly, to which a collection of highly relevant ostraca documents can be ascribed. The two tombs and the corresponding documents form one of two case studies of the thesis. The second case study will analyse a collection of papyri belonging to the scribe in charge of overseeing the construction of a tomb in the necropolis of Saqqara, for a general by the name of Mai. The tomb itself has yet to be located, but the papyri was found in the Old Kingdom mastaba tomb of Niankhba,¹ just north of the Unas Causeway, which indicates that the tomb of Mai possibly is located in close proximity. The papyri contain work journals that together cover approximately seven months of tomb construction, which includes daily entries of work achieved. Although from the early 20th Dynasty, the papyri reveal many similarities to the documents from the tombs of Senenmut, and when compared, the two sets of data yield unprecedented insight to the administration and bureaucratic workings of the construction of Egyptian private tombs.

The production scale baseline for the 18th Dynasty Theban private tombs will also be compared to two other datasets, which will provide further perspective and the opportunity for recognizing trends and problematic issues. The first dataset stems from the royal tombs in the Valley of Kings, provided online by

¹ J. E. Quibell & A. Olver (1926), "An ancient Egyptian horse", 172.

the Theban Mapping Project. The second consists of the private tombs from the city of Amarna, the new capital built by the 18th Dynasty king Akhenaten. The tombs here offer unique insight into the speed with which private tombs could be built, as the city was only in use for approximately 12-13 years.² It has been argued that the average yearly output of tombs at Amarna was far higher than that at Thebes.³ This has been explained in such a manner that the tomb builders were the same as in Thebes, but the king had them relocated when he founded his new capital.⁴ However, the volumetric combined size of the Amarna tombs has not been investigated in terms of production rate.

The socioeconomic aspects of tomb construction have in the past only briefly been touched upon and usually only in connection with individual tombs. Thus, there exists no comprehensive study of the topic on a broader scale, i.e., gathering of material and documentation for all tombs and analysed in a diachronic perspective. For a variety of reasons, previous scholars have either had a limited time scope, limited funding for a specific monument/part of monument(s) or simply set out to answer a different research question. When confronted with questions concerning the ancient Egyptian economy, Egyptologists have had a tendency to choose one of two options: those preferring to see an overarching redistributive system,⁵ and those in favour of a market economy.⁶ However, a third view has in recent years gradually gained acceptance, namely that of a mixed system.⁷ This interpretation claims that the redistributive system only worked within official institutions (e.g. temples), where income or tax revenue was redistributed to the employees as salary. Outside the official institutions, however, a market economy would have supplied the goods, which were not provided and distributed by the state. As will be shown, the tombs of the Egyptian elite are a good example of this mixed system.

John Romer calculated the New Kingdom average output of decorated private tombs in the Theban area to no more than eight per decade.⁸ This calculation would suggest that events with a serious impact on society – imperial wealth in the beginning of the New Kingdom, religious disunity in the Amarna period, or economic crisis during the late Ramesside period – had no direct effect on the number of tombs constructed. This, in turn, implies that tomb allocation was controlled by a high administration, or possibly the king himself. However, Romer neglected to consider basic criteria of tomb construction, such as the size

² I adhere in this thesis in general to the widely used chronology in I. Shaw (2000), *Oxford History of Ancient Egypt*, 479-483.

³ J. Romer (1994), "Who Made the Private Tombs of Thebes?", 217.

⁴ See for example Romer (1994), 217-218.

⁵ For example J. Janssen (1975a), *Commodity prices from the Ramessid period, an economic study of the village of Necropolis workmen at Thebes*.

⁶ See for example C. Eyre (1998), "The Market Women of Pharaonic Egypt".

⁷ For example B. Kemp, (2006), *Ancient Egypt: Anatomy of a Civilization*, 302ff.

⁸ Romer (1994), 227 fig. vii.

of the tombs, or the extent and quality of their decoration. In addition, several new tombs have been discovered since Romer's analysis, which invariably calls for a re-evaluation of his results.

Part of the dissertation concerns the calculation of the dimensions of the 18th Dynasty tombs from Thebes and Amarna in terms of cubic and square meters. This is done in order to highlight the importance of size in relation to economic importance. Simply put, the larger the tomb constructed the greater the expenditure in resources and time will be. Analysing tomb dimensions in a diachronic perspective will allow for the calculation of an average construction output. This is done in an effort to provide quantifiable and factual numbers for an area where such numbers are scarce. That being said, the same information is available for the Valley of the Kings, an area that has received much more attention due, in large part, to tourists and worldwide public fascination. The information retrieved from the Theban Mapping Project website will be compared to my own data, in order to determine the tomb production rate for both royal and private necropoleis.

1.2 - Theoretical background and research history

This thesis concerns the economic sociology and socioeconomics of tomb construction, and thus falls between the disciplines of sociology and economy. I define economic sociology and socioeconomics as the economic cause and effect on social institutions and social relations. Both economic sociology and socioeconomics are social sciences, but with very different approaches to explaining human behaviour. Simply put, economists create theories and models that generalise and encompass everything in order to predict a future outcome. Sociologists, on the other hand, tend to focus on separate instances with their own unique circumstances, not to be able to predict the outcome, but to be able to understand the reasons behind it. Consequently, sociologists criticize economists for constructing abstract models and disregarding the empirical data, and economists blame sociologists for their inability and unwillingness to make predictions.⁹ As a result of its research area, this thesis tends towards the side of sociology, being unable to predict future events, but hoping to explain the reasons, motivations and economic understanding of the ancient Egyptians who built the tombs of the New Kingdom.

In the past, the borders of the two disciplines were relatively clear cut, but the space between them has been explored and bridged on numerous occasions, even more so in the last 30-40 years, and the edges have become blurred. The disciplines of economic sociology and socioeconomics have been applied to the modern world, medieval societies and ancient cultures, thereby gaining new insights and perspectives to the explanations behind historic events. Economic sociology and socioeconomics work from, and to a large

⁹ N. J. Smelser & R. Swedberg (2005), "Introducing Economic Sociology", 6.

degree are based on, what can be described as 'experience' to be able to make qualified assumptions about future events. This has, for example, been attempted by building databases and observing statistical tendencies, and, in doing so, working on the same principals as weather forecasts utilise. The degree of success varies, but in general the larger the database on which predictions are based, the more accurate the results will be, because more aspects and variables can be included.

A major problem for the thesis is that there is still no working theory that encompasses all or even most aspects of economy in ancient societies with which to compare, and it is questionable whether or not this is even possible, with such a broad spectrum of cultures through time.¹⁰ As such, what follows is not a chapter on theory, economic or sociological, but rather an attempt to present a brief overview of some of the most important scholarly positions and thoughts on the subject in the last century. I will present how economic sociology started and evolved into what is referred to as new economic sociology and socioeconomics. Afterwards, I discuss some of the works dealing with the ancient Egyptian economy and finally summarise the existing academic thoughts on the socioeconomics of Egyptian tombs in particular.

1.2.1 - Economic sociology

Joseph A. Schumpeter defined economic sociology in 1954 as the study of social institutions, within which economic behaviour takes place.¹¹ According to Neil J. Smelser and Richard Swedberg, who also deal with the issue in their book *Introducing Economic Sociology*, it is "*the sociological perspective applied to economic phenomena*" or "*the application of the frames of reference, variables, and explanatory models of sociology to that complex of activities which is concerned with the production, distribution, exchange, and consumption of scarce goods and services*".¹²

One of the earliest scholars to apply sociological concepts to the study of economy was Max Weber (1864-1920), who set out to investigate the beginnings of and reasons behind modern capitalism. He did this in unusual fashion for his time, as his focus was less on the economy itself, but rather, in a sociological mind-set, on the reasons behind it. Weber realised that the economic actions of the individual always are linked to and influenced by the behaviour and actions of others.¹³ He therefore investigated the underlying belief systems and moral codes of conduct that individuals share, in particular through religion.

Weber compared the religions of the world and came to the conclusion that Christian Protestantism is the only religion that is suited for capitalism. He stated that Eastern religions such as Hinduism teach

¹⁰ M. Van De Mieroop (2004), "Economic Theories and the Ancient Near East", 54.

¹¹ J. A. Schumpeter (1954), *History of Economic Analysis*, 21.

¹² Smelser & Swedberg (2005), 3.

¹³ Smelser & Swedberg (2005), 4.

acceptance of the social position in which one is placed and that withdrawing from the world in contemplation and prayer is the route to salvation, and that this and similar religious attitudes led to traditionalism and not to economic engagement or entrepreneurship.¹⁴ There can be no doubt that Weber included ancient Egypt in his category of Eastern religions, although he never states it explicitly. Weber argued that Protestantism provided Northern Europe with a productive and commercial attitude that was ideal for the development of capitalism and, by extension, the industrial revolution. Weber's work on this topic is highly controversial, but the basic insight that economic analysis must also account for factors traditionally seen as non-economic is widely accepted. Weber demonstrated through his comparative studies that economic practice is related to social institutions, including religion, and that to understand economic conventions, one must understand their links to these institutions.¹⁵

In his studies of the ancient world, however, Weber was very much limited by his own time and, in particular, the limited knowledge of ancient Egypt. Thus, he claimed that, when it comes to taxation, "*We know how an Egyptian tax levy was made: the officials arrived unexpectedly, the women began to cry, and soon a general flight and hunt began; those liable for taxes were hunted down, beaten, and tortured into paying what was demanded by the officials, who were themselves held responsible for quotas based on the official cadaster.*"¹⁶ It is not entirely clear where Weber got this information from and the evidence to support the statement for the pharaonic period is entirely lacking.

Almost half a century after Weber and drawing on his work, Karl Polanyi postulated that the ancient economy was 'embedded' in society, instead of being a separate and measurable activity. He used the term 'embedded' to stress that the economy served to maintain the social system,¹⁷ and proposed that an embedded economy gave the ancient cultures their structure and stability. Thus, there was no need for the concept of, or indeed a requirement for, economics in the modern sense.¹⁸ Polanyi's great contribution to the field was that he called the wide assumptions about how the economy generally functions into question.¹⁹

Polanyi introduced the economic term of 'substantivism', which was based on a three-part typology of exchange: redistribution, reciprocity, and, when it came to the ancient world, limited market trade.²⁰ Polanyi saw the large ancient economies, including that of Egypt, as being mostly based on the principle of

¹⁴ F. Dobbin (2005), "Comparative and Historical Approaches to Economic Sociology", 34.

¹⁵ *Ibid.*

¹⁶ M. Weber (1909), *The Agrarian Sociology of Ancient Civilizations* (translated by R. I. Frank (1976)), 131.

¹⁷ H.K. Schneider (1974), *Economic Man: The Anthropology of Economics*, 7.

¹⁸ K. Polanyi (1965), "Aristotle Discovers the Economy", 71.

¹⁹ D. C. Snell (1997), *Life in the Ancient Near East*, 151.

²⁰ I. Morris & J. G. Manning (2005a), "The Economic Sociology of the Ancient Mediterranean World", 143.

internal redistribution.²¹ This meant that the basic needs of the people (mainly for agrarian products) were supplied by, and indeed controlled by, the elite. Although reciprocity, or gift exchange, was practised in all layers of society, Polanyi considered it especially important in the international relations of the ancient ruling elites, as he did not see free markets as having any large part to play, neither on the local, national, or international level. What little trade existed was also controlled by the ruling elites and did not involve markets.²² The views of Polanyi influenced many researchers in Egyptology, e.g., Jac Janssen and Edward Bleiberg, who in the Egyptian textual evidence saw a society based on redistribution.²³

An important and influential scholar to the field of economic sociology is Moses Finley, who in his “The Ancient Economy” (1973) took the view that the people of the ancient world had no concept of ‘economy’ and “lacked the conceptual elements which together constitute what we call ‘the economy’.”²⁴ In this aspect and in the use of the three basic types, redistribution, reciprocity, and market exchange, he agreed with Polanyi, but Finley went further and created the first general model for understanding all of the ancient economies.²⁵ He wanted to develop a problem-oriented form of economic history and from this quantitative methods arose, although later scholars followed very different goals, which in many instances challenged Finley’s conclusions.²⁶ Finley’s notion of a single model for the ancient economy,²⁷ however, was not successful.²⁸

1.2.2 - New Economic Sociology

An important aspect was added to economic sociology in 1985 by Mark Granovetter, when he wrote about the problem of *embeddedness*.²⁹ Here, he took a different view of Polanyi’s idea of ‘embeddedness’ and interpreted economic actions and behaviour as social actions, which are not organic in society, but “*embedded in networks of interpersonal relations*”.³⁰ Granovetter also called into question the importance that economists put on the concept of rationality in the individual, as individuals are rarely as rational and logical as economists think, and that they should instead focus on taking social structures into account.³¹

²¹ K. Polanyi (2001), *The Great Transformation. The Political and Economic Origins of Our Time*, 53.

²² Polanyi (2001), 62.

²³ S. T. Smith (2003), *Wretched Kush. Ethnic identities and boundaries in Egypt’s Nubian Empire*, 62.

²⁴ M. Finley (1999), *The Ancient Economy* (Updated Edition), 21.

²⁵ W. Scheidel & S. von Reden (2002), “Introduction”, 1-2.

²⁶ J. Andreau (2002), “Twenty Years After Moses I. Finley’s *The Ancient Economy*”, 40.

²⁷ P. Cartledge (2002), “The Economy (Economies) of Ancient Greece”, 18.

²⁸ Scheidel & Reden (2002), 3.

²⁹ M. Granovetter (1985), “Economic Action and Social Structure: The Problem of Embeddedness”.

³⁰ Granovetter (1985), 504.

³¹ R. Swedberg (1997), “New Economic Sociology. What Has Been Accomplished, What Lies Ahead?”, 162.

Building on Granovetter's ideas, Richard Swedberg wrote a statement of intent for the theory of 'New Economic Sociology', a term also taken from Granovetter. In this, he describes the basic approach for scholars using New Economic Sociology, which is "*to analyse central economic processes with the help of standard sociology, especially networks theory, organization theory, and cultural sociology*".³² Thus, the core of 'New Economic Sociology' is made up of the concepts of 'Social Networks' and 'Institutions'.³³

Another key player in New Economic Sociology is Frank Dobbin, who explored the concept of political power in addition to institutions and social networks. He argued that power not only shapes institutions and conventions, but also that social networks are the conduits through which power is exercised.³⁴ The current thesis is inspired by Dobbins' concept that "[...] *economic practices emerge through distinctly social processes in which social networks and power resources play roles in the definition of certain practices as rational*".³⁵ Consequently, economics and socio-political realities are thoroughly interconnected in any culture or society, ancient Egypt included.

The current thesis is also influenced by the framework of Social Science History as outlined in the book *The Ancient Economy. Evidence and Models* by Ian Morris and J. G. Manning.³⁶ Here, Morris and Manning argue that the field of ancient economic history, in spite of the important work of the last century, still lacks applicable theories and methods.³⁷ At the same time, they assert that historians and archaeologists working in the field of ancient economy have yet to think about building explanatory models and the relation of these to the empirical evidence. In investigating the socioeconomic significance and consequences of ancient Egyptian tomb construction, inspiration is drawn from this assertion. In particular, Morris' and Manning's call for focusing on how archaeology can be integrated more meaningfully into ancient economic history: "*In many contexts archaeology provides the only data that can be quantified on a large scale, and there can be no economic history without quantification*".³⁸ In line with this reasoning, the dissertation will combine an analysis of both the archaeological and textual evidence. I do not, however, propose a new economic model to explain every aspect of the ancient Egyptian economy.

³² Swedberg (1997), 166.

³³ Smelser & Swedberg (2005), 15-16.

³⁴ Dobbin (2005), 45.

³⁵ Dobbin (2005), 28.

³⁶ I. Morris & J. G. Manning (2005b), "Introduction", 25-39.

³⁷ Morris & Manning (2005b), 2.

³⁸ Morris & Manning (2005b), 3-5.

1.2.3 - Economic Models

The need to develop economic models for the ancient world is important because they enable contextualisation through structure of specific observations and interpretations.³⁹ These structures, or models, need to be as simple as possible, because they already are “*a simplification of a complex reality, designed to show up the logical relationships between its constituent parts*”.⁴⁰ In other words, the simpler the simplification or model is, the better utilisation and applicability it will have. That being said, it is also important to be aware on which level a model is to be utilised, i.e., a macroeconomic level model would not work on the more detailed microeconomic level.

David C. Snell suggested that scholars in the field of Ancient Near Eastern economy should use a basic model consisting of only two components – the Household and the Market.⁴¹ Snell defines the household as a social group that is noneconomic, i.e., there is no payment for work or production within the household. The market, in turn, is the relationship, interaction and information between the various households.⁴² This very basic model works well for the ancient Egyptian economy, because it includes the aspects of redistribution, reciprocity, and market exchange that abound in the discourse about ancient economics. Furthermore, the relationship between household and market are attested in the Egyptian textual material, for example in the Hekanakhte letters of the Middle Kingdom. Here, the author wrote to his son, amongst others, instructing him how to manage the family’s household, which included the sowing of certain crops and taking care of the store of seeds and herd of cattle.⁴³ It also concerned the production of cloth for sale and hiring of temporary labour, but also the payment for land rental in cloth, all of which clearly concerned transactions outside the household.

1.2.4 - The Ancient Egyptian Economy

Defining the ancient Egyptian economy as something consistent throughout its extensive history is problematic at best, not only because of the long period of time in question, but also because of the geographical and regional differences within the area. It is even difficult to ascertain that economic practices were the same throughout Egypt within the same period. Add to that the problem of the available material evidence of written records which are scarce and fragmented and whether or not there is enough material to generalise statements about the society in which the economic actions occurred. If the available

³⁹ Van De Mieroop (2004), 54.

⁴⁰ K. Hopkins (2002), “Rome, Taxes, Rents and Trade”, 191.

⁴¹ Snell (1997), 154.

⁴² Snell (1997), 155.

⁴³ C. Eyre (2010), “The economy: Pharaonic”, 294.

material is only a fraction of the original quantity, that fraction can constitute a special case, rather than representing the average.

Due to these reasons there are no generalised economic theories regarding the ancient Egyptian economy. What has been suggested, are ideas that are based upon specific observations in the available material. When referring to material evidence from Egypt, sociologists and economists from outside of Egyptology tend to focus on the Ptolemaic and Roman periods only, where the material evidence is much more abundant, i.e., quantifiable, than in earlier periods. This is the challenge for the present thesis, as the material studied here is easily 1000 years older and significantly different in nature.

The following are some of the most prominent and often cited scholars in Egyptology working on the subject of the ancient Egyptian economy.

In his comprehensive study from 1975 on Egyptian commodity prices, based largely on textual material from Deir el-Medina, Jac J. Janssen stated that the study of prices has been recognised as an essential part of economic history since the beginning of the 20th century. He also pointed out that there is no theory when it comes to Egyptian economic history, a part of Egyptology that still needs to be written.⁴⁴ Janssen's approach was novel at the time, as it focused on the available material evidence rather than on theory or preconceived ideas. At the end of his book, Janssen tentatively suggested that the importance of redistribution was greater in the Egyptian economy than in our own, and that "*market exchange was a mere peripheral phenomenon*".⁴⁵ He considered that although the macro-economic structure of Egypt seems to have rested on the relatively self-sufficient peasantry, it was nonetheless dominated by the state, which, as textual evidence confirmed for him, was an organisation based on the principle of redistribution. He did acknowledge that the textual evidence only comes from the higher state administration or projects related directly to it, and that much of Egypt's economy would have gone un-recorded in writing.

Janssen was highly influenced by the economic model of Polanyi, but he was also aware of the limitations of the Egyptian textual evidence. As the focus of his book is to present this material in relation to prices, he is careful not to generalise. The same year, however, in an article elsewhere, Janssen boldly stated: "*I do not suggest that making profit was entirely unknown to the ancient Egyptians, but it seems to me highly unlikely that it was the pivot of the economy. That was rather redistribution.*"⁴⁶

⁴⁴ J. Janssen (1975a), *Commodity Prices from the Ramessid Period*, 1.

⁴⁵ Janssen (1975a), 559.

⁴⁶ J. Janssen (1975b), "Prolegomena to the Study of Egypt's Economic History during the New Kingdom", 139.

In 1979, it seems that Janssen was being more cautious. In an article focused on temple economy, he was very careful to only use the term of redistribution in connection with the temples.⁴⁷ He does, however, give the impression of implying that the redistributive system of the Egyptian temples was employed throughout the entire society. He considered Egyptian society based on the subsistence economy of the individual and family units, in which barter was possible, but also described situations that probably should be labelled as workings of a market economy. For example, he mentions the fact that the temples sold commodities such as wine, meat and cakes to the wider public through “special merchants”.⁴⁸

In his article “The Economy of Ancient Egypt” from 1995, Edward Bleiberg defines what a redistributive economic organisation is and how it functions.⁴⁹ Declaring himself a follower of Janssen, Bleiberg is also inspired by Polanyi and thus an advocate for the redistribution theory. In an economy based on free market trade Bleiberg sees a society in which select people or merchants can, and therefore will, live off their profit making trade and not be employed elsewhere. Thus, his understanding of market economies is that they only exist if full-time merchants are able to make a living and that evidence for part-time merchants are only proof of a barter economy. As a counterpoint to Bleiberg’s claim that profit-based trade did not occur,⁵⁰ Ben Haring argued in 1997 that even though the ancient Egyptians may not have made a living off personal profit, this does not mean that the concept of profit did not exist. “*To state that the Egyptian language has no word that can be translated as “profit” would be too simple*”.⁵¹ He continues saying that the accumulation of wealth was a strong economic motive for the Egyptians and that this is indicated on a number of occasions in the material.⁵²

The discussion of whether the Egyptian economy was market based or a grand system of redistribution is according to Haring irrelevant. He argued that because the evidence for both sides is case-specific there is no justification to apply either economic direction to the entire Egyptian society.⁵³ It only applies to the special circumstance it describes, and thus the realisation that ancient Egyptian economy was a mix of systems, which complemented each other, has to be acknowledged. Haring also discusses the cultural anthropological model of “peasant societies”, the use of which was proposed by Janssen,⁵⁴ that potentially could encompass the entire Egyptian economic system. Haring does recognize that it is not a purely economic model and that it is far from simple. The main problem with the model, as Haring sees it, is the

⁴⁷ J. Janssen (1979), “The Role of the Temple in The Egyptian Economy during the New Kingdom”.

⁴⁸ Janssen (1979), 515.

⁴⁹ E. Bleiberg (1995), “The Economy of Ancient Egypt”, 1375.

⁵⁰ Bleiberg (1995), 1377.

⁵¹ B. Haring (1997), *Divine Households. Administrative and Economic Aspects of the New Kingdom Royal Memorial Temples in Western Thebes*, 15.

⁵² *Ibid.*

⁵³ Haring (1997), 16.

⁵⁴ Janssen (1975b), 131.

identification of the cultivators in Egyptian documents and to which degree they can be considered either private or institutional peasants, or both, as this will ultimately decide the classification of the society.⁵⁵ However, this requires much more data to be processed and in all likelihood the discovery of much more directly usable material evidence.

David Warburton has written extensively on the Egyptian economy as a market economy following a Keynesian model.⁵⁶ This means that, for Warburton, the system was more or less capitalist in nature and that the Egyptians knew of the market mechanisms even if they had not coined the phraseology for them. Warburton thus rejects the idea of redistribution as an economic system and sees the state as collectors rather than redistributors.⁵⁷ One of his main and recurring points of criticism of the scholars committed to Polanyi's redistribution model is that they recognize the market in the material evidence, but that they discard this because they assume that there was no role for it to play.⁵⁸ However, the data does not support the idea of an all-powerful state in economic terms, and Egyptologists have, according to Warburton, gradually removed their perception of ancient Egyptian state control in favour for a growing acceptance for the importance of markets and merchants.⁵⁹ For Warburton, the markets of the ancient world, Egypt included, not only determined the distribution of goods but also the economic behaviour of the population.⁶⁰

In his article about market women from 1998, Christopher Eyre outlines his view of the Egyptian economy, which is in opposition to Bleiberg. Instead of a redistributive economy with marginal market trade, Eyre sees the market on a local level as a structural necessity for the majority of Egyptians.⁶¹ He argues that the redistribution economy is an elite feature, which only to a small degree influenced the rural population, mostly through taxation. In 2010, Eyre argued that redistribution as a term is only appropriate in the weakest sense and therefore best avoided, because, as he sees it, the Egyptian state did not "*collect production from the producers to return it*" later as wages.⁶² He advises caution that this is only the cognitive suggestion that the word redistribution itself gives of a centralised control of revenue and goods at a low level, and which is not found in the data from ancient Egypt. As Eyre puts it himself: "*It is a cliché,*

⁵⁵ Haring (1997), 16-17.

⁵⁶ D. A. Warburton (1997), *State and economy in ancient Egypt, fiscal vocabulary of the New Kingdom*, 111-128.

⁵⁷ Warburton (1997), 337.

⁵⁸ D.A. Warburton (2016), *The Fundamentals of Economics. Lessons from the Bronze Age Near East*, 289.

⁵⁹ Warburton (2016), 306.

⁶⁰ Warburton (2016), 317.

⁶¹ Eyre (1998), 185.

⁶² Eyre (2010), 306.

*but one that needs to be treated seriously, that government in Egypt has never fully controlled economic or social life in the villages.”*⁶³

The Egyptian state was never, in Eyre’s view, large or efficient enough to control the economy on the level of the peasantry, but used already existing structures that functioned locally. In doing so, the experience of the individual farmer or craftsman was not the give-and-get-in-return of a redistribution system, but rather an acquisition by the state of both produce and labour through conscription.⁶⁴ Thus, the fundamentals of the Egyptian economy functioned within a system of subsistence behaviour, in which the main focus was on ensuring the wellbeing of the family and was therefore to a high degree disconnected from the economic workings of the elite and their concerns.⁶⁵

Eyre’s argues that although evidence for a system of redistribution in the upper classes of Egyptian society and one of subsistence for the lower classes exists, this should not conceal the fact that they are simply representations of the balance between supply and demand in the economy, albeit seen from opposite sides of the spectrum.⁶⁶ He also states that studies on the micro-economic level, e.g. of the behaviour of individuals or movements of specific resources, are more productive at present for the understanding of the Egyptian economy than determining the general structure.

Addressing the same issues as Janssen, Bleiberg, Warburton and Eyre, Barry Kemp added thoughts on how to ask the right questions and the context in which they are asked. Rather than postulating an all-encompassing economic theory, he offers suggestions on how to think about the ancient Egyptian economy. He argues, for example, that when discussing whether ancient Egypt was an economy based on redistribution or on the idea of a free market, scholars tend to forget that the modern economy of the West is actually a mix of several economic systems.⁶⁷ On the one hand, modern states may be dedicated to market freedom, where the manufacturing and retailing of consumer products is in focus, but these states retain a large corpus of official institutions, e.g. the armed forces and, more importantly in this context, the banking sector, which is directly controlled by the various national banks. Kemp maintains that “*a notional free market in commodities is in the end controlled by governments and is not therefore free*”.⁶⁸ On the other hand, states that opt for fully administered economy, i.e. planned, controlled, and implemented,

⁶³ *Ibid.*

⁶⁴ Eyre (2010), 307.

⁶⁵ *Ibid.*

⁶⁶ *Ibid.*

⁶⁷ Kemp (2006), 303.

⁶⁸ Kemp, (2006), 304. This is also the opinion of D. Graeber (2011), *Debt : the first 5,000 years*, 71, who further argues that markets require governing states to exist.

have to be both accurate in the prediction of consumer needs and flexible in the supply of goods to accommodate all circumstances.⁶⁹

Kemp sees the ancient Egyptian economy as encompassing both systems of redistribution and market economy. He illustrates this by examining the great mortuary temples of the New Kingdom and their grain storing capabilities and facilities. The granary of the Ramesseum alone had the capacity to feed 3400 families for a year.⁷⁰ Kemp does not deny the massive economic weight of the mortuary temples, but he sees it as a passive weight, put in place to cushion the subsistence shortcomings of a low Nile-flood. He argues that this system and its administration were, however, not monolithic in nature, and that its economic impact therefore was not felt during normal times.⁷¹

The Egyptian administration of the economy was, as Kemp sees it, very much an *ad hoc* affair,⁷² illustrated in the royal decrees, in particular the Edict of Horemheb⁷³ and the Nauri Decree of Seti I.⁷⁴ The former is an attempt by Horemheb to prevent the unfair accumulation of revenue by different groups of people through royal command. Kemp explains each case as a response to a specific complaint, rather than a general rule.⁷⁵ In the latter decree, Seti I secures the income of his newly established temple at Abydos for all posterity by setting forth rules of punishment for any official who might infringe on this economic privilege.⁷⁶ For Kemp, Egyptian governmental structure, including the economy, was exercised through royal decrees and commands, and was built on a cycle of 1) decision, 2) petition of complaint and 3) redress of situation.⁷⁷ Following both Haring and Kemp, I am convinced that the Egyptian economy was much more flexible and complex than is currently realised.

In 2016, Brian Muhs added a new outlook on the discussion regarding the economy of ancient Egypt by first accepting the existence of both redistribution and market and secondly seeking to describe the causality for choosing one or the other by the ancient Egyptians.⁷⁸ The choice, according to Muhs, ultimately comes down to transaction costs, which include variables such as “*search costs, measurement or information costs, negotiation or bargaining costs, and enforcement or policing costs*”.⁷⁹ Muhs employs the approach of

⁶⁹ Kemp, (2006), 303.

⁷⁰ Kemp (2006), 259.

⁷¹ Kemp (2006), 305.

⁷² Kemp (2006), 306.

⁷³ Cf. W. J. Murnane (1995), *Texts from the Amarna Period in Egypt*, 235-240.

⁷⁴ F. L. Griffith (1927), “The Abydos Decree of Seti I at Nauri”, 193-208.

⁷⁵ Kemp (2006), 305-306.

⁷⁶ Kemp (2006), 306-307.

⁷⁷ Kemp (2006), 308.

⁷⁸ B. Muhs (2016), *The Ancient Egyptian Economy, 3000-30 BCE*.

⁷⁹ Muhs (2016), 3.

New Institutional Economics formulated by Ronald Coase⁸⁰ and also closely follows the argumentation of Douglass North,⁸¹ which suggests that transaction costs could help explain ancient, medieval, and modern economic history. Muhs writes: “... *ancient nonmarket allocation systems* (i.e. redistribution) *presumably existed because they too had lower transaction costs than the available markets. This could easily occur if the transaction costs of ancient markets were high, as a result of limited numbers of suitable exchange partners, limited information about such partners and their goods and services, and limited enforcement of transaction agreements.*”⁸²

Muhs argues for a correlation between the Egyptian state’s ability to collect taxes from its people and its use of documentation for the taxes and the use of silver as a medium of exchange. Because a standard unit of value or currency was not in use during the third millennium, the Old Kingdom state had no realistic way of taxing individuals and thus contented itself by taxing larger estates or institutions.⁸³ The influx of metal, particularly silver, into Ancient Near Eastern societies during the late second millennium meant that the state had the possibility to compare prices of goods more easily and they were able to tax trade as well as property and production. This is why, according to Muhs, there was an increase in economic documentation as well as an increased interest by the state in protecting people’s property rights.⁸⁴ This would secure tax revenues for the state that were consistent and stable.

1.3 - Methodology

In this section, I outline the various approaches that I employ for the different kinds of sources and how I relate the groups of material to each other. As the project involves both archaeological data and textual material, different methods for analysing them are needed. In addition, subdivisions have been made in each category to which I apply a slightly different method of approach depending on a number of specific circumstances which are clarified in each instance. It should be noted that the measurement of the royal cubit used by the Egyptians is in this thesis referred to simply as ‘cubit’ unless stated otherwise and always regarded as being 52.5 centimetres in length.⁸⁵

⁸⁰ R. Coase (1937), “The Nature of the Firm”.

⁸¹ D. North (1977), “Markets and Other Allocation Systems in History: The Challenge of Karl Polanyi”.

⁸² Muhs (2016), 3.

⁸³ Muhs (2016), 98-99.

⁸⁴ Muhs (2016), 113.

⁸⁵ This becomes especially important in chapter 3.4.1. For the measurement of the cubit and use of 52.5 cm see: C. R. Lepsius (1865), *Die alt-ägyptische Elle und ihre Eintheilung*, 13; and D. Arnold (1991), *Building in Egypt. Pharaonic Stone Masonry*, 10; and C. Rossi (2010), *Architecture and Mathematics in Ancient Egypt*, 59-61.

1.3.1 - Bluebeam Revu

In order to describe the socioeconomic relationship between the textual evidence and the volumetric data from the private tombs, the first step has been to determine the volume of the tombs. Short of visiting and measuring all the tombs in person, the only way to obtain the size and volume of the Theban private tombs is to use excavation plans and reports.

In calculating the size and volume of the Theban and Amarna tombs, I opted for using the architectural software Bluebeam Revu. This has had major advantages over calculating by hand, where one would first copy a plan drawing onto paper, then measure and calibrate the scale, and finally attempt to measure and calculate the various parts of the tomb. In Revu, all that is needed is a scan of the plan drawing and its scale, preferably in as high a resolution as possible. I scanned all available excavation reports as images (jpeg) in a set size of A3 and with a resolution of 400 dpi. This allowed me to clean the images from smudges and discolouration using Photoshop before saving the various images of each tomb as a single PDF file. The size of each tomb could then be calculated in the Revu software (see figure 1).

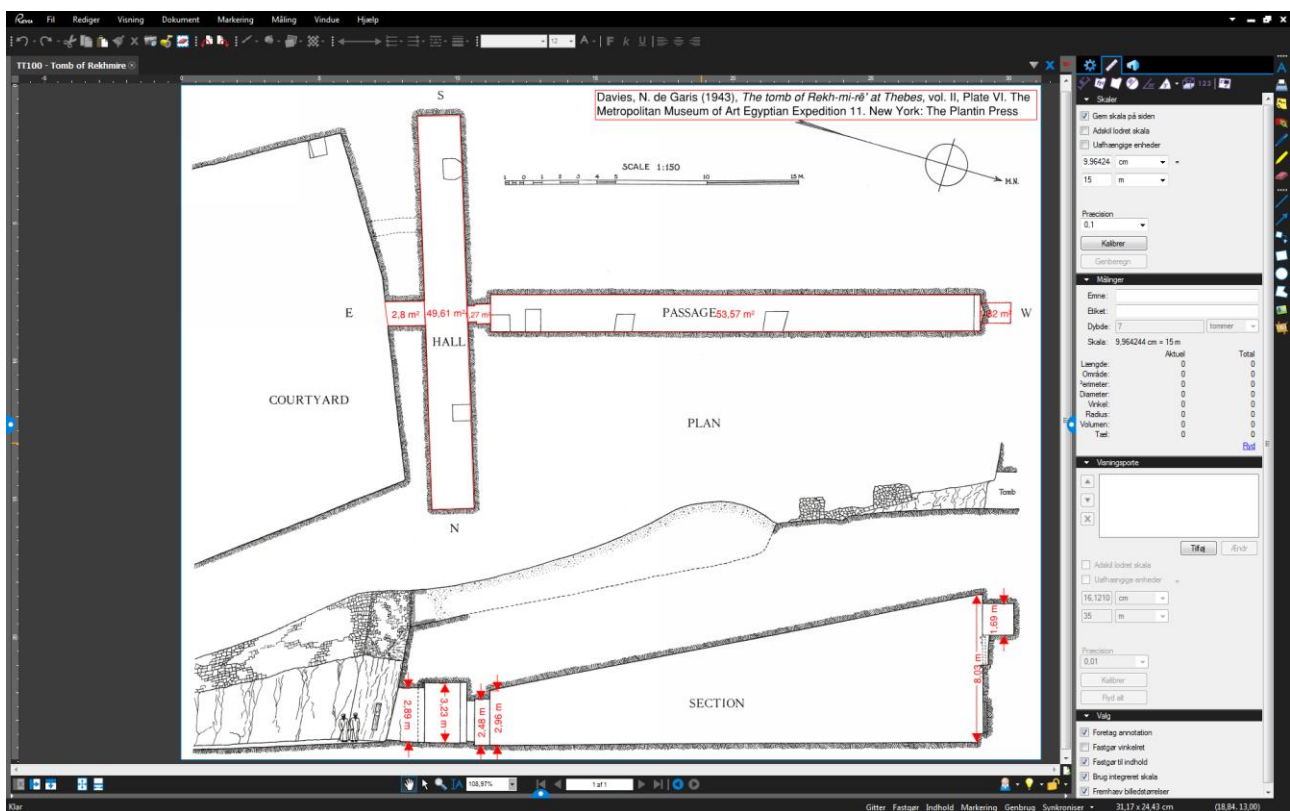


Figure 1 – Screenshot of the Bluebeam Revu software.

The first step is to select the calibrating tool (see figure 2 – indicated with red arrow), in order to define the scale of the drawing, which is defined by clicking on the ends of the scale (blue arrow) and determining the length and the unit (meters and centimetres, or feet and inches) used in the original.

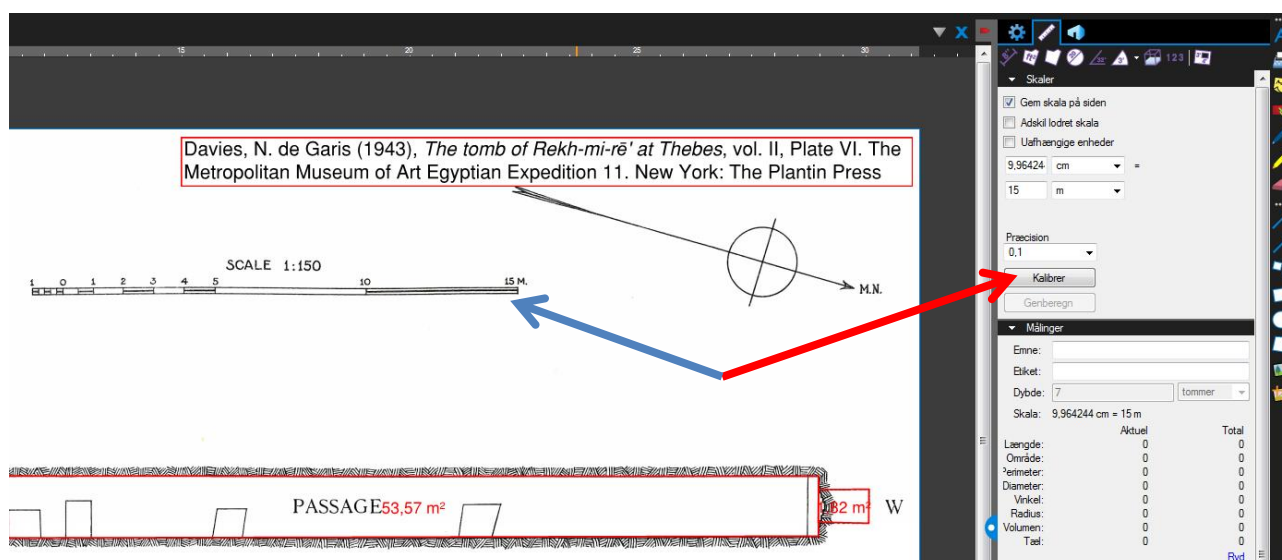


Figure 2 – Details of the Revu software.

The software calculates the proportions of the drawing and then it is a simple matter of selecting the Area setting for measuring area (see figure 3 – red arrow), followed by marking of the corners, doorways, and other features of the tomb, and the software calculates the area. For each tomb, I have tried to add separate calculations for the larger chambers, doorways, shafts, niches, and burial chambers, as this allows me to compare the different architectural components and calculate their average sizes.

To obtain the volume of a tomb the Length setting in the software is selected for measuring the height on the section drawings (see figure 3 - blue arrow). Once the height of a certain area is measured (see for example figure 1 – ‘Section’ part of the plan at the bottom) the result has to be manually typed in to the correct area’s extended data field.⁸⁶

⁸⁶ I opted for doing this manually as a way to check the results for each area and part of a tomb, and thus avoiding major mistakes that would significantly alter the final results.

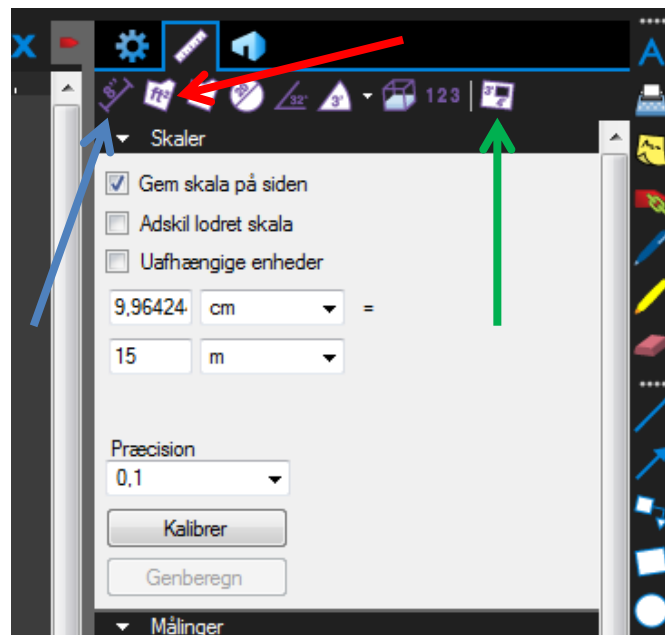


Figure 3 – Features of the Revu software.

During the process, I have made decisions about where to take measurements for each part of each tomb plan that in the specific instance seemed appropriate. This applies especially to the vertical measurements. For the best cut tombs, very few vertical measurements are needed, for example TT 100. Here, the axial hall follows very straight lines, not only on the section drawing of Davies, but also in reality, due to the firmness of the rock in which it is cut. Therefore, only two measurements were required to determine the average height; one at the entrance of the hall and one at the back. This simple approach could not be used for the majority of the tombs, as many of them display uneven floor and ceiling surfaces, and their respective section drawings rarely portray this. My vertical measurements are thus based on the distance between the ideal lines drawn by the excavation team. I have tried to take as many measurements as feasible in every part of the tombs, but at the same time I had to weigh this against the time limit of the project.

Another very useful feature of the software is the ability to deselect an area, for example columns that have been left in place in the cutting process to support the ceiling. They are not part of the volume of rock removed in the construction process and should therefore not be included in the calculation. The removal of such features is done by selecting the Cut out setting (see figure 3 – green arrow) and marking the structures that should not be part of the area measurement of that chamber or passage. TT 192 - the tomb of Kheruef - is a good example of this issue (see figure 4). Whether the columns remain standing to this day or fell down during construction is irrelevant as the intention was to have them standing.

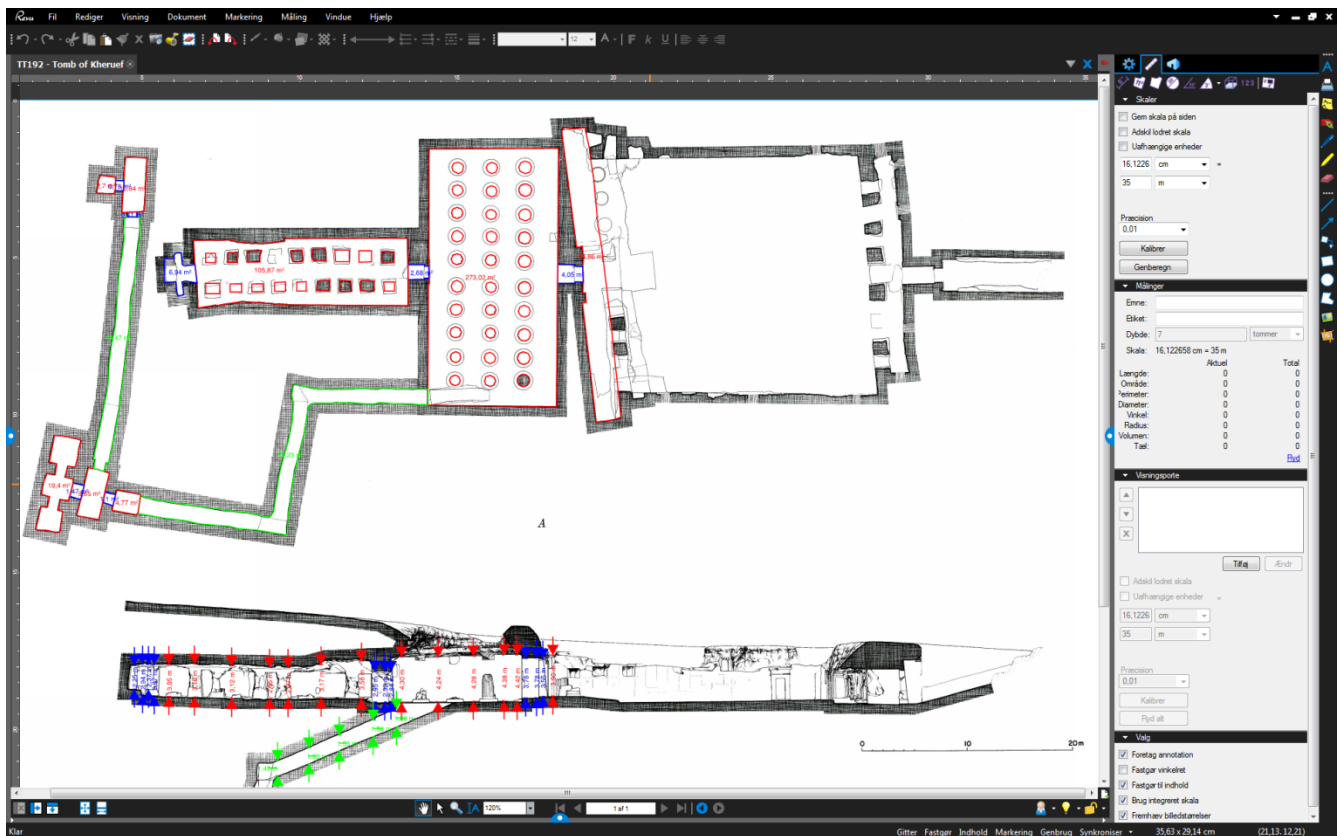


Figure 4 – TT 192 with marked area and height measurements.

I have intentionally left out the measurements for the courtyards in front of the tombs because many tombs share a courtyard. It is usually not difficult to ascertain to which tomb a courtyard originally belonged, but it is difficult to identify any extensions added during later phases of the New Kingdom or the Third Intermediate Period. I have therefore not included the courtyards in the 18th Dynasty calculations and only deal with the internal structures.

1.3.2 - The Theban private tombs

The largest archaeological dataset for the project comes from the Theban private tombs. These are labelled 'TT' along with a number that relates to the sequence of the discovery of the tomb. There are currently 218 tombs dated to the 18th Dynasty, five of which have proven impossible to find any details for, let alone any publication or sketches.⁸⁷ In addition, there are seven other tombs which may or may not be from the 18th Dynasty,⁸⁸ but which have not been included in the analysis for this very reason. The project thus analyses data from 213 tombs. These tombs come in a variety of shapes and sizes, and their geographical

⁸⁷ These are TT 199 (belonging to a Amenirneferu) in el-Khokha, TT 325 (Smen) in Deir el-Medina, TT 383 (Merymose) in Qurnet Murai, TT 401 (Nebseny) and TT 402 (unknown owner) both in Dra' Abu el-Naga.

⁸⁸ These are TT 174 (unknown owner) in el-Khokha, TT 268 (Nebnakht) in Deir el-Medina, tombs A11 (Khaemwaset) and A27 (Say) in Dra' Abu el-Naga, tombs C12 (Meh) and C13 (unknown owner) in Sheikh Abd el-Qurna, and tomb D2 (Petersuemhebsed) in Qurnet Murai.

location spans the entire Theban necropolis, from Qurnet Murai and Deir el-Medina in the south, through the areas of Sheikh Abd el-Qurna, el-Assasif, Deir el Bahri, el-Khokha, and all the way to Dra' Abu el-Naga in the north. These tombs are rock cut and consist of various features such as forecourt, chapel, burial shafts, underground rooms and passageways.

The chapels are typically made up of an entrance or doorway cut in the limestone to give access to a transverse hall, which can contain pillars left in place during the excavation process. Opposite the entrance is usually another doorway leading to an axial hall which can lead to yet another doorway and the inner chapel. In the chapel there can be access to the tomb, the so-called 'down stairs' area, by way of a shaft or a passage with descending stairs. The shafts could also be located in the forecourt to the chapel. The burial chamber(s) of the tomb is located below the chapel and consists of one or several rooms, which are connected by doorways or passageways. Usually when referred to in literature there is no differentiation between these parts and all are rendered as 'the tomb'. I use the specific terminology for each of the architectural features when dealing with a specific tomb, be it forecourt, chapel, shaft, passageway, or the rooms below, but when referring to the monuments as one or several groups, I also use the term 'tomb' for the collective components. 62 of these tombs are the core of my analysis as they are published with all three key elements required to calculate their volume, i.e. plan drawing, section drawing, and a scale measure. 48 of the tombs are published with both a plan drawing and a scale measurement, but no section drawing. Finally, 103 tombs have been published with only a plan drawing, thus lacking both a scale measurement and a section drawing.

A major obstacle to the present work was the absence of accurate measurements from archaeological reports. Calculating the size of tombs based on excavation reports rely on the presence of scaled plan and section drawings. However, not all reports feature section drawings (from which the height of the tomb is calculated), but only a plan drawing. This means that the only measurement possible is that of area, i.e., in two dimensions. To get the cubic meters (three dimensional) measurements for these tombs, it has been necessary to base the calculations on the average height of the tombs with section drawings. However, this is not without problems either, as the different parts of the tombs varies greatly in height. For example, the chapel, or 'the upstairs', of the tomb usually has a ceiling height that is equal to or much higher than an average person standing upright. This was done in order to accommodate visitors, such as priest and family members of the deceased bringing offerings, and to have as much wall space for decoration as possible. This is contrasted by the tomb chamber(s) or 'downstairs', which was meant to hold the body and sarcophagus of the tomb owner. These chambers are commonly of a lesser ceiling height, as no living persons were meant to visit them and therefore there was no reason to make them any higher. Also, doorways and shafts have different heights, and this means that all the different architectural parts of a

tomb should, ideally, be calculated individually as they have been done in tombs with section drawings provided. However, due to time limitations and the fact, as stated above, that the goal is to provide an average of the tomb size over time, I have opted for only using three key numbers for height when calculating the volume of tombs with no section plans. These key numbers are (1) for the entire chapel part, (2) for the shaft(s), and (3) for the tomb chamber(s). The key numbers are calculated based on the average height of the architectural parts of tombs with section drawings.

(1) = 3.18 meters⁸⁹

(2) = 5.007 meters⁹⁰

(3) = 1.811 meters⁹¹

This means that the measured square meters of the tombs with a plan of a tomb chapel without a section drawing have been multiplied with key number (1).⁹² These numbers will of course change as new tomb data and correlated data is added to the group from which the key number is calculated.

1.3.2.1 - The date of Theban tombs

One of the problems of visualising the Theban tombs diachronically is the dating of the individual tomb. Ideally, each tomb should be placed on a timeline portraying every year of the 18th Dynasty, from 1550 to 1295 BCE, but this is not possible as the tombs are not dated this precisely. In the best cases, the tombs are labelled as having been constructed early or late in a specific king's reign, but often the possible dating spans two or more reigns. There are even tombs which are only roughly dated to the early, middle, or late 18th Dynasty or simply to the entire Dynasty. I have made the choice of simplifying to a certain degree, for reasons of convenience. For example, when a tomb is dated to the reigns of Thutmose IV and Amenhotep III, I have put it the latter reign. The reason is that the dating usually is based on textual evidence from or in the tomb mentioning kings, and so if a tomb mentions both Thutmose IV and Amenhotep III, it seems reasonable that the tomb was not finished or at least put to use until the reign of the latter king. However, for some tombs the dating is based on the tomb type, the layout or stylistic features (see chapter 4.1.2).

⁸⁹ Around 2/3 of the measured tomb chapels have for ceiling heights between 2 and 3 meters, while 1/5 are above that and the rest is below 2 meters. About 1/3 of the tomb chapels are within half a meter of the key number.

⁹⁰ The height or depth of the shafts of a single tomb has been added together, i.e. I have not distinguished between a tomb with 1 shaft of x-meters and a tomb with 3 shafts of y-meters.

⁹¹ Again, this number is based on all the chambers, passages, and doorways belonging to the 'downstairs' part of the monument.

⁹² For example, if a tomb chapel is 40 m² in area, its volume will be 127.2 m³ (40 x 3.18), and a tomb chamber of 25 m² has a volume of 45.275 m³ (1.811x25).

This is not ideal, as very little is known about the ‘fashion’ in tomb design, and using it as a means of dating is less accurate than using other evidence. However, since there is no alternative, I will use the dates for the tombs as they are presented on the Theban Mapping Project webpage and in Friederike Kampp’s *Die Thebanische Nekropole*,⁹³ as these are up to date. Returning to the considerations on grouping the tombs as belonging to the reign of one king or another, there is the larger issue of the co-regency of Hatshepsut and Thutmose III. Tombs from the reign of the latter could in fact have been built during the reign of Hatshepsut, only to have her name erased when the proscription of her name took place,⁹⁴ and thus the number of tombs dated to the reign of Thutmose III might be skewed. Even more problematic are the 31 tombs which have no reign assigned to them at all but are labelled only as ‘18th Dynasty’ or the marginally more precise ‘Early, Middle, or Late 18th Dynasty’.⁹⁵ I define ‘Early 18th Dynasty’ as the period from Ahmose to and including the reign of Hatshepsut, the ‘Middle’ from Thutmose III de facto taking the throne to the end of Amenhotep III’s reign, and ‘Late’ as the Amarna period until the end of Horemheb’s reign. I have opted to not include these tombs in the statistics pertaining to the reign of kings, but only make use of their numerical value, and presenting them as a separate group at the beginning and end of each diagram.

1.3.3 - Amarna tombs

Unlike the Theban private tombs which span the entire 18th Dynasty, the Amarna private tombs date only to one reign, that of Akhenaten. Therefore, there is no need for dividing the tombs into chronological groups and, more importantly, being in a new and uniquely demarcated region, they represent the full production of tombs in relative close proximity to the burial of the king of that time. This also means that these tombs reveal the speed at which they could be built, even though none of them can be said to be completely finished. This is especially true for the tombs of Neferkheperuhersekheper (AT13) and Ay (AT25) which both consist of a single room that is only half to two-thirds excavated. Because of this, it is possible to track the work progress in each tomb, which clearly started with the excavation and outlining of the ceiling. Because they are unfinished, the archaeologist drew the plans accordingly, i.e. outlining not the floor, which is what is normally done with the Theban private tombs, but rather the ceilings.⁹⁶ This has no immediate consequences for the measuring and calculation of the volume of the Amarna private tombs, but it is something to keep in mind when dealing with the work progress of the tomb builders.

⁹³ F. Kampp (1996), *Die Thebanische Nekropole. Zum Wandel des Grabgedankens von der XVIII. bis zur XX. Dynastie*.

⁹⁴ D. O’Connor (2006), “Thutmose III: An Enigmatic Pharaoh”, 33.

⁹⁵ See, for example, B. Porter & R. L. B. Moss (1960), *The Theban Necropolis. Part 1. Private Tombs*, Topographical Bibliography of Ancient Egyptian Hieroglyphic Texts, Reliefs, and Paintings, *passim*.

⁹⁶ N. de G. Davies, (1906), *The Rock Tombs of El Amarna. Part IV. The Tombs of Penthu, Mahu, and Others*, 9-10.

The volume of the Amarna tombs has been calculated using the Bluebeam Revu software also used for the Theban tombs. Unlike the latter tombs that have been published by numerous scholars, the Amarna tombs were made available in publication by the same excavator, Norman de Garis Davies (1903-1908).⁹⁷ In his publication, he made a point of having good architectural plans of the tombs with an accompanying scale, as well as section drawings. This means that I have been able to calculate the size of all Amarna tombs without having to rely on a calculated average for any part of the tombs.

1.3.4 - Textual material

Working with documentation from the ancient world requires first and foremost the reading and translation of the material, in order to structure and analyse the contents. In addition, the archaeological context and relation to the archaeological material, i.e. the tombs, will be considered for each text where it is possible to do so. As the main focus of this thesis is the 18th Dynasty, it would seem logical to compare the archaeological evidence only with textual material from the same period. However, whereas the Theban private tombs constitute a quantifiable and almost complete group of archaeological material, the same cannot be said for the contemporary documentary evidence, which in comparison is scarce. Because of this relative scarcity of documents from the period, it is necessary to include chronologically unrelated material that in terms of context is very similar. In effect, this means using textual material from the entire New Kingdom, in particular the 20th Dynasty, which deals with tomb construction projects on both the private and the royal levels.

Because of the context in which documents in general were produced and used, or at least our current understanding of it, they rarely provide complete sets of information. This is also the case with the Senenmut ostraca. In my analysis of the ostraca, I will focus on details about the volume being excavated from the tombs. This is invariably linked to the number of men who did the work and the tools and resources they used for it. Unfortunately, there are large gaps of both timeframe and knowledge of the building process, and it is therefore necessary to adduce other sources, which come from different places and periods.

Due to the difference between the private 'temple-tombs' in Saqqara compared to the rock-cut Theban and Amarna tombs, the process of building them must have been different as well, although it is unclear to which degree. However, the planning, organisation, and administration of each project was most likely done in a very similar manner. The information in the Saqqara Dossier that is in focus, is the kind that deals with these preparation stages of the tomb building project as well as the initial stages of construction. That

⁹⁷ Davies (1903-1908), *The Rock Tombs of El Amarna. Part I-VI*.

the papyri in general are from a later date than the ostraca probably also has some consequences for the interpretation of the different stages of construction, but as the evidence from the 18th Dynasty is that much less cohesive, this becomes difficult to demonstrate.

1.3.5 - The relationship between archaeological and textual material

The core of this thesis builds on the premise that ancient textual sources are better understood when contextualised and as far as possible tested within a wider frame of archaeology.

The main difference between the two types of material is that the archaeological data provides the overall and final picture of the tomb production and the data from the documents reveals the construction process. When looking only at the archaeological tomb data, it is possible to determine a range of information, which among other things includes the layout of the tomb, burial customs, style and types of decoration, and of course the size of the monument. It is even possible to track influences of design and decoration of a tomb in comparison to other tombs, and looking closer at tool marks and patterns of re-design, one can hypothesise about the general work structure. However, the archaeology reveals little about the specifics of the time spent, the resources consumed, or the total or specific manpower employed during the creation of a given monument.⁹⁸ The opposite is invariably true by looking only at the textual evidence, which never describes the end result, but gives us glimpses into the construction work in progress. Therefore, using the best of both datasets, the archaeology provides data that can more easily be quantified while the textual documentation describes and outlines the construction process involved.

On the basis of the archaeological data, it is also possible to evaluate the content of the documents as either typical or non-typical for tomb construction. If the content of the texts conforms to the general picture set by the archaeological data, it is possible to use the textual content to further our knowledge of the process of tomb construction. And at the same time, if the archaeological data displays coherence with the documentation, it is more than likely that the same organisation and work progress was employed elsewhere.

If the content of the texts does not conform to the archaeological data, the reasons can be many. Maybe vitally important details are now missing from the textual evidence or maybe ancient misunderstandings of procedure or outright cheating for personal gain result in skewing our understanding of things.

⁹⁸ Cf. D. Laboury (2012), "Tracking Ancient Egyptian Artists, a Problem of Methodology. The Case of the Painters of Private Tombs in the Theban Necropolis during the Eighteenth Dynasty", 202.

1.4 - Structure of thesis

The thesis is divided into four distinct chapters; the Saqqara Dossier case study, the Senenmut case study, the Private Tombs of the 18th Dynasty, and finally the Socioeconomics of New Kingdom Tomb Construction.

The Saqqara Dossier case study is based on the papyri from the mastaba tomb of Niankhba. It includes an introduction to the texts by comparing their content by entry types and investigating the people and places mentioned directly in the texts. The chapter also includes an analysis of the materials being used in the construction project, both in terms of type and quantity, and the logistics and timeframe involved. All of this is drawn together in a description of the overall work process that was utilised in the building of the tomb of general Mai. Because the tomb has yet to be found, the case study is exclusively based on the textual material and as such constitutes a general overview of the socioeconomic aspects of tomb construction. I include my translations of the dossier in appendix 1.

The Senenmut case study is based on both textual and archaeological data, and as such offers an opportunity to correlate the two types of material. First, I investigate, analyse, and present the two tombs of Senenmut (TT 71 and TT 353) in terms of architecture, geology, and placement within the landscape. Secondly, I discuss the materiality of the ostraca and the relative chronology of the texts. I then move on to the construction terminology used in the texts, including the ancient measurements that determine not only size, but also the production output. Following this, I focus on the organisation of both people and institutions involved in the project in order to describe the construction process that specifically relates to the socioeconomic aspects of the construction of a 18th Dynasty Theban tomb. My translations of the ostraca are found in appendix 2.

Chapter four includes the statistical analysis of the Theban and Amarna tomb sizes. As such, it presents the data in a number of diagrams that are contextualised in relation to the historical circumstances and draws attention to aspects that have been ignored previously. I first present the construction scale baseline and the data from the Theban private tombs on a general level. This leads to a description of tomb groups as representations of the various reigns of rulers and a more detailed discussion of the volumetric size of the tombs. This reveals a pattern of distribution of what I have labelled 'super tombs', which I investigate along their owners' status and position in the Egyptian society. This, in turn, leads to a description of the Theban tombs and the 'usual' titles of the tomb owners. I then focus on the smaller corpus of data from Amarna. As these constitute a limited group of tombs in terms of timeframe, i.e. the reign of Akhenaten, I will move directly to presenting their volumetric sizes and the titles of their owners. Finally, I compare the Amarna data to the data from Thebes.

In the final chapter I contextualise the three preceding chapters. First, I discuss tomb sizes and the connection to Egyptian economy, as well as my approach to the ancient Egyptian material, and the variables and sub-variables that was involved. I then discuss the production output of the 18th Dynasty private tombs in Thebes and Amarna tombs, and compare it to the data from the Valley of the Kings. Following this, I compare the two tomb construction projects of Senenmut and Mai, and then describe and discuss the parameters for the socioeconomic effect of rock-cut tombs, which is synthesized into four variables.

1.5 - Documentary practices

Before moving on, it is prudent to consider what the ancient Egyptians wrote down and why they did, and evaluate the context in which documents were written, in the present case in connection to tomb construction. Understanding the purpose and reasons for the creation of a document is as important as the content of the document. Seemingly unrelated documents can shed new light on the socioeconomic conditions if the surrounding context is understood. This means that the documentation for tomb construction relevant for this thesis is not restricted to the work records directly describing the building of a tomb, but can be extended to include other types of texts. Documenting a tomb construction project presumably had a purpose, but the specifics to this purpose elude us, as we do not have the full context or the full description of the building process of any tomb at any time. The simple question of whether an administrative text was actually used for anything after it was written, and if so, for what purpose, is not easy to answer. The fact of the matter is that writing and documenting have several purposes, which depend on the situation at hand. Texts can be used as an *aide-memoire* for the writer, a documentary device for people not present at a given event, or they can be a demonstration of authority and power. For the present thesis, it is therefore important to recognise the usage and intention of the textual material that is under scrutiny.

1.5.1 - The invention of writing and the document

In this thesis, a narrow interpretation of the terms 'document' and 'documentation' is utilised. Here, they refer specifically to the ancient texts, i.e., inscriptions written on a more or less portable material. Monumental inscriptions, e.g., on temple walls and statues, can arguably be defined as documents and documentation as well. However, these were not created for capturing an event in the moment it takes place, but rather the commemoration or celebration of an event or person, sometimes years if not decades

or centuries later.⁹⁹ When referring to either 'document' or 'documentation' I mean the text and its content, not the object or material on which the text was written.

Documentation began with the invention of writing, which according to Chris Eyre "*should be understood as an inchoate process, developing out of very limited processes of notation, growing through multiple systematic extensions of usage over a considerable span of time.*"¹⁰⁰ Because writing possibly started as a form of accounting,¹⁰¹ i.e., as an aid to keep track of numbers of objects, animals, or people,¹⁰² it is also found in connection with transactions from the earliest of times. Whether trade and transactions, or the accounting of these, were the reasons to the invention of writing is beyond the scope of the present thesis to answer. However, it seems that writing and transactions are linked and intertwined from the earliest periods of human history.

The document is then defined as writing about and accounting for events, commodities, people, and animals. The act of documentation is not straightforward to describe because it at any given time depends on the existing attitudes towards writing, which again depends on what people actually used it for and how often, including, for example, their level of literacy.¹⁰³ Eyre rightly argues that the document should not be seen as something evolving from primitive origins to sophisticated, modern standards because it is constantly being re-invented, essentially every time a person needs to record something. He further argues that "*The very act of writing - any form of notation - carries within itself, from the beginning, the core of documentary practice, since any written text has the ability to serve in some way as a witness or instrument in a socially significant transaction. And this is true even before proper writing.*"¹⁰⁴

The document acts as a witness and the act of documenting is witnessing, but only if the document is later believed or trusted by people other than the author, meaning that these people must be used to the use and application of writing as witness. A contract as a document, for example, is both an agreement between parties and witness to that agreement. It is also a reference point for consequences if the

⁹⁹ For a general and much broader view and discussion of the terms 'document' and 'documentation' see S. Briet (1951), *Qu'est-ce que la documentation?*; P. Otlet (1934), *Traité de documentation*. For an overview of the modern historical understanding and usage of the terms, see M. K. Buckland (1997), "What is a Document". In *Journal of the American Society for Information Science*, vol. 48, issue 9, 804-809.

¹⁰⁰ C. Eyre (2013), *The Use of Documents in Pharaonic Egypt*, 4.

¹⁰¹ In both Egypt and Mesopotamia, this seems to be the case. Cf. K. A. Bard (2000), "The Emergence of the Egyptian State", 78. For discussions on the topic in general, see for example B. G. Trigger (1998), "Writing systems - A case study in cultural evolution" and S. Houston, J. Baines, & J. Cooper (2003), "Last Writing: Script Obsolescence in Egypt, Mesopotamia, and Mesoamerica".

¹⁰² For example, the Inca and the preceding kingdoms of Peru and their neighbouring countries invented and used the Khipu (or Quipu), a device of knotted strings that that was used for long distance bureaucratic recording and communications. The device exclusively contained numerical information and cannot be 'read' as a language. See, for example, G. Urton (2002), "An Overview of Spanish Colonial Commentary on Andean Knotted-String Records", 3.

¹⁰³ Eyre (2013), 4.

¹⁰⁴ *Ibid.*

agreement is not adhered to by one or more parties involved. However, contracts and the administrative system behind them seem only to occur as such, i.e. recognisable by modern standards, relatively late in the historical use of writing in Egypt.¹⁰⁵

Documents are found in many shapes, sizes, and layouts, and fulfil many different aspects of witnessing. The great bulk of Egyptian documents are in some way related to the administration of these witnessing aspects. Eyre states that the standardisation of the procedure, in order to increase the efficiency with which the government could penetrate private society, came without much care for the practical convenience for the population. However, once those who did the registering realised the standardization's usefulness the quality of the documents increased accordingly. *"Its evident success lay in the fact that the underlying attitudes to documentary usage were long familiar to the native population, whether or not they were literate."*¹⁰⁶ By the New Kingdom, Egypt had long experience with the use of documents and could be expected to have standardised procedures. However, this firstly requires the transmission of specific knowledge and secondly entails that a certain way of recording is continuously useful. The problem with the latter is that the Egyptian administration was primarily project-oriented and had an ad hoc approach to implementing its will.¹⁰⁷ The former requirement involves training and education of scribes. As Juan Carlos Moreno García writes: *"Even the formal training and competence of scribes could be rather primitive and consist mostly of the ability to collect and record very specific pieces of information but without a thorough knowledge of writing, as the Old Kingdom archive of Balat shows."* He further points to the fragility of what he calls true archives after their immediate utility has gone, as can be seen in the case of the Amarna Letters and the many discarded papyri and ostraca at Deir el-Medina, but also in the washing and reuse of older papyri.¹⁰⁸

What it meant to be a scribe in ancient Egypt is an inherently difficult question to answer and we can observe scribes at many levels of training and education who seem to have been employed in different functions.¹⁰⁹ The purpose of documenting information was for the Egyptians dependent on the context, but the purpose of the scribe was that of representing a system and the class of scribes. Chris Eyre describes the core of this phenomenon: *"Paperwork easily and frequently becomes a self-justifying activity, leading to the repetitious creation of standard documents of ephemeral value. They are, however, valuable symbolically and emotionally to their writer, providing him with employment, status, and authority. The*

¹⁰⁵ J. C. Moreno García (2013), "The study of ancient Egyptian administration", 10.

¹⁰⁶ Eyre (2013), 3.

¹⁰⁷ The many royal decrees illustrate this well as they are reactions to specific petitions in need of direct intervention by the king.

¹⁰⁸ Moreno García (2013), 11.

¹⁰⁹ See for example, M. S. Pinarello (2015), *An Archaeological Discussion of Writing Practise. Deconstruction of the Ancient Egyptian Scribe*, 18. See also, D. Soliman (2015), "Workmen's marks in pre-Amarna tombs at Deir el-Medina", 122.

action of writing marks his function as supervisor to his subordinates, and the stored texts serve as proof of process to his superiors, regardless of their practical value. Texts are often an end in themselves, and not a means to an end."¹¹⁰ This self-preservation by the scribe was probably not lost on the administration to which he reported. This can be seen in a clay tablet from Balat (no. 7191), which demonstrates the optimisation of resource and workforce supervision by pooling together seemingly unrelated activities into one workshop, all reporting to or supervised by a single scribe.¹¹¹ Thus, the Egyptian bureaucracy and administration was demonstrably able to rethink its management of human resources efficiently.¹¹² When the scribe is considered as representing both the system and himself/his class, his use of ostraca as a writing material is also, at least partially, explained.

1.5.2 - Purpose of ostraca

When it comes to scribal practices, the Theban region is well-known for writing on ostraca, especially during the New Kingdom. The difference between the three dynasties of the era is that the bulk of texts come from the 19th and 20th Dynasties from the village of Deir el-Medina, while the texts from the 18th Dynasty are found in the entire Theban necropolis and the quantity is much smaller. However, more and more new texts do appear from current excavations or are reappearing in museum collections elsewhere.

The 18th Dynasty Theban ostraca are in general found in the vicinity of the tombs and other building projects, and contain information about a broad range of issues, everything from delivery lists for supplies to poetry probably recorded at dull moment during a workday, from sketches for the decoration to lists of workers present on a given day. The texts are more or less easily understandable and they provide insights into various aspects of tomb and monument construction. However, it is not clear what their ultimate purpose was, other than performing the act of recording. Were they used as notes, to be re-written in daybooks or letters to be sent or delivered to whoever was in charge? Was every single detail on the ostrakon transferred to a more transportable papyrus or was the purpose just to uphold the office of scribes, demonstrating the ability to write and record, whether useful or not? Was it a means to stay in control, possible leverage over less educated workers, wielding a potential 'threat by reed pen', being able to report bad behaviour to a superior who possessed real power in economic or political terms?

The use of limestone flakes and discarded pottery pieces as a medium for writing in Deir el-Medina is often understood as mere drafts, used on the spot, later to be copied onto papyrus destined for an archive,

¹¹⁰ Eyre(2013), 12.

¹¹¹ H. Papazian (2013), "The Central Administration of the Resources in the Old Kingdom: Departments, Treasuries, Granaries and Work Centers", 43.

¹¹² Papazian (2013), 43.

either local or at the central administration.¹¹³ As demonstrated by Schafik Allam in 1968,¹¹⁴ this was indeed the case for some examples, but mostly in cases connected to the judicial sphere. As Koen Donker van Heel suggests, the copying was perhaps outside the local administration's official daily practice and drafts of daily administrative texts may not have been a common phenomenon.¹¹⁵ He argues that the exception to this was the practice for copying name-lists, which is a logical necessity for keeping track of any large number of people. Chris Eyre also has his reservations about ostraca being used as mere drafts, as it is not clearly and consistently demonstrable that they were copied onto other materials, whereas the opposite, i.e. an ostrakon being used as the finished or only version, does occur.¹¹⁶

Ben Haring is of the same opinion, and while agreeing that ostraca probably could be used as drafts, he also draws attention to the fact that there is not a single example of a text that entirely matches up on both a papyrus and an ostrakon. However, he does cautiously add that this could be an unfortunate result of the poor survivability of papyrus.¹¹⁷ He points to the materiality of documents used in Deir el-Medina changing in favour of papyrus in the middle of the 20th Dynasty, while before it was mainly 'bookkeeping' on ostraca. He argues that this implies a limited use of texts as evidence, or witness, because ostraca were rarely certified.¹¹⁸ It seems evident that the information written on ostraca would and should be used for something.¹¹⁹ However, according to the available evidence, it seems that they were not mere drafts, scribbled down on site, destined to be copied onto papyrus and stored in an archive. This then seems to partly confirm the act of writing and documenting by the scribe as a way of visibly exerting his authority over the assumingly non-literate workers.¹²⁰

The Deir el-Medina ostraca could, however, also have been stored for the inspection by the central administration. There is, as Donker van Heel points out, no need for the middle step of transcribing the texts onto papyri if the scribes of the vizier, who regularly visited the village, would make their own audit and copies of the texts.¹²¹ This, of course, does not include the ostraca documenting the work on the royal tombs, which are found not close to the workmen's village but on-site, i.e. in the Valley of the Kings and the Valley of the Queens. A suggestion could be made for the existence of a temporary archive close to the construction site, as one would expect the vizier to also visit the tomb and inspect the progress of construction, but archaeological evidence for such an arrangement is lacking.

¹¹³ W. C. Hayes (1960), "A Selection of Tuthmoside Ostraca from Der el-Bahri", 37.

¹¹⁴ S. Allam (1968), "Sind Die Nichtliterarischen Schriftostraka Brouillons".

¹¹⁵ K. Donker van Heel & B. Haring (2003), *Writing in a Workmen's Village. Scribal Practice in Ramesside Deir el-Medina*, 18.

¹¹⁶ Eyre (2013), 30.

¹¹⁷ B. Haring (2003), "From Oral Practice to Written Record in Ramesside Deir El-Medina", 265.

¹¹⁸ Haring (2003), 265.

¹¹⁹ See for example Černý (1973a), *A Community of Workmen at Thebes in the Ramesside Period*, 226-227.

¹²⁰ Cf. Eyre (2013), 243.

¹²¹ Donker van Heel & Haring (2003), 2.

A similar issue is found in connection with the private tomb building sites, specifically with TT 71. The ostraca from the tomb were found in the artificial terrace in front of the tomb, which means they were produced and discarded before the terrace was finished. If the scribe(s) of these documents did copy them onto another material, they would presumably have had to do so on the construction site, as it seems implausible that they would have brought the ostraca along with them, say to their home, and then back to the site again once copied. The only evidence of text copying in the Senenmut corpus, perhaps as a draft, are two ostraca bearing the same information about work in the tomb. It is not clear which is the original and which is the copy as the two ostraca in question (nos. 63 and 64) are not identical in terms of layout of the words and lines, and no. 64 is in a poorer state of preservation, but at the same time gives more specific information about the delivery of wood brought to the construction site. The purpose of the copying is also not clear, but perhaps it is a simple matter of wanting to make a better report. William C. Hayes, however, suggested that the scribal students came along with their teacher to the building site as an attempt to explain the literary and religious texts found on a number of the ostraca.¹²²

The Senenmut ostraca contain daily entries concerning work in relation to the tomb construction project and are usually headed by the date referencing the seasonal month and day, and only in two cases the regnal year.¹²³ As such, they are similar to the numerous ostraca from Deir el-Medina in the Ramesside Period, with the text entries being in a notebook layout, i.e. continuous and in random order.¹²⁴ This is also the way the journal texts of the Saqqara Dossier were composed regarding the tomb construction project (see chapter 2). These are daily entries,¹²⁵ beginning with a date and the details having been noted down when they occurred or as the scribe remembered them. As such, they seem to represent not so much an official document but the personal notebook of the author, the scribe Buqentuf. Both the Senenmut ostraca and the Saqqara Dossier make references to extra-textual information, i.e., context that the authors were aware of but did not need to make clear in writing.¹²⁶ As documents containing daybook entries are common in the surviving textual material from ancient Egypt, the daybook type of document seems to have been almost standard practice,¹²⁷ and is an attested form dating back to the Old Kingdom¹²⁸ and the Middle Kingdom.¹²⁹ Very telling are the papyrus fragments of a daybook roll uncovered at the mortuary temple of

¹²² W. C. Hayes (1942), *Ostraka and Name Stones. From the tomb of Sen-Mut (No. 71) at Thebes*, 3.

¹²³ O. 62 and O. 80 - see chapter 3.3 below.

¹²⁴ Eyre (2013), 240-241, describes the daybook nature of the ostraca from Deir el-Medina spanning the late 19th to halfway through the 20th Dynasty as a set of running notes and not a final text.

¹²⁵ F. Hagen 2016, "Movements of the royal court", 175.

¹²⁶ Haring (2003), 265.

¹²⁷ Eyre (2013), 62.

¹²⁸ For example, the Wadi el-Jarf Papyri from the reign of Khufu in the 4th Dynasty. P. Tallet (2017), *Les Papyrus de la Mer Rouge I*.

¹²⁹ For example, P. Berlin 10050 from Lahun. A. Scharff (1924), "Briefe aus Illahun", 48-49, pls. 11-12.

Thutmose III which contain lists of temple offerings that are identical in the formula they display to the Abusir temple accounts from 1000 years earlier.¹³⁰

The challenge, then, is to gauge the unrecorded details of the documents pertaining to the historical situation and the immediate circumstances of the author. This is in part the purpose of the following two case studies of the Saqqara Dossier and the Senenmut ostraca.

¹³⁰ F. Hagen & D. Soliman (2018), "Archives in Ancient Egypt, 2500-1000 BCE", 99.

2. The Saqqara Dossier case study

This chapter consists of a case study of a tomb building project for a general Mai during the 20th Dynasty described on the papyri known as the Saqqara Dossier. The dossier reveals details about the overall organisation of Egyptian building projects and the process of constructing a tomb, and includes details about the economic expenditures for the tomb owners and the socioeconomic composition of the workmen Saqqara necropolis. This chapter attempts to interpret these aspects by describing and contextualising them from a socioeconomic viewpoint. The main purpose of the case study is to define the main stages of the construction process for the tomb building project. As most of the information within the papyri deals with the early stages, such as planning, preparation, and organisation, and less with the building of the tomb, focus will be on these stages.

The chapter begins with a general description of the papyri followed by a discussion on the internal chronology and the different types of entries that can be identified within the texts of the dossier. The chapter then focuses on the specific information and smaller details of the texts, such as the named individuals and number of workmen, the geographical locations and the logistical challenges these entail, as well as the equipment and tools utilised in the building process. Finally, the chapter provides an interpretation and overview of the construction stages within the tomb building project.

2.1 - The Papyri

The four papyri that make up the Saqqara Dossier were written during the reign of Ramesses III by the same scribe, a man named Buqentuf. The four papyri are currently located in three different museums on as many continents. Three of the papyri are in the Egyptian Museum in Cairo (P. Cairo 52002, P. Cairo 52003, and P. Cairo 52004) while the last papyrus is currently in no less than five pieces that are divided between the Metropolitan Museum of Art in New York and the Kunsthistorisches Museum in Vienna. The former institution holds one piece (P. MMA 3569) and the latter four pieces (P. Vienna 3934+3937+9352a+9352b). This fragmented papyrus has together with two of the Cairo papyri, been published as transcriptions in Kenneth Kitchen's *Ramesside Inscriptions*.¹³¹ P. Cairo 52002¹³² and P. Cairo 52003¹³³ have also been published by Paule Posener-Kriéger with images, translation, transcription and

¹³¹ K. Kitchen (1989), *Ramesside Inscriptions VII*, 263-273.

¹³² P. Posener-Kriéger (1981), "Construire une tombe à l'ouest de Mn-nfr (P. Caire 52002)". In *Revue d'Égyptologie* 33, 47-58.

¹³³ P. Posener-Kriéger (1996), "Au plaisir des paléographes Papyrus Caire JE 52003". In P. der Manuelian (ed.) *Studies in Honor of William Kelly Simpson*, 655-664.

commentary, while the pieces outside of Egypt (P. MMA 3569¹³⁴ and P. Vienna 3934+3937+9352a+9352b¹³⁵) have been made available online as images in relatively high resolution. The final papyrus (P. Cairo 52004) is currently unpublished and in an unspecified location in the Egyptian Museum. However, this and the other two papyri were registered and entered into the Cairo Museum in 1928,¹³⁶ after having been discovered in a mastaba tomb south of the Step Pyramid enclosure of Djoser.¹³⁷

Based on the description of J. E. Quibell and A. Olver, who did not mention the owner of the tomb, it is possible to identify the find spot as being the Old Kingdom mastaba of Niankhba from the Sixth Dynasty.¹³⁸ The mastaba (see image 1) lies just to the north of the Unas Causeway which is positioned in a wadi that leads to the Nile valley, and so provides a convenient corridor of approach to the necropolis of Saqqara. People ascending to the plateau and returning to the valley through the wadi would pass the mastaba in close proximity and this may have been a contributing factor regarding why the papyri were left here.



Image 1 - Mastaba of Niankhba where the three papyri in the Egyptian Museum were found. Notice in the top right hand side the Unas Causeway running towards the Nile valley. Photograph by Daniel Soliman, 2017.

¹³⁴ The Metropolitan Museum of Art (metmuseum.org)

¹³⁵ Kunsthistorisches Museum Wien (khm.at)

¹³⁶ B. Gunn (1929), "Additions to the Collections of the Egyptian Museum during 1928", 95. In *ASAE XXIX*, 89-96.

¹³⁷ Quibell & Olver (1926), 172.

¹³⁸ J. van Dijk (1993), *The New Kingdom necropolis of Memphis: Historical and Iconographical Studies*, 25, n. 45.

The papyrus split between the museums in New York and Vienna (P. MMA+Vienna) must have been found several decades before the Cairo papyri, as the Vienna fragments were donated to the museum by Heinrich Brugsch in 1878 and partly published by Ernst Ritter von Bergmann in 1886,¹³⁹ but the date of discovery cannot be reconstructed.

2.2 - The texts

The dossier consists of 11 distinct texts. The Cairo papyri consist of two texts each which are easily distinguished into the recto and verso sides. I therefore refer to them only by their respective numbers of the papyrus and the designation of the letter R or V for recto or verso (see table 1). However, the MMA and Vienna papyrus display multiple texts on both sides, and rather than using the full reference each time I will for the sake of convenience refer to each entry using the designation of MMAV for the papyrus followed by a specification, for example MMAV-RA2.¹⁴⁰

<u>52002R</u>	P. Cairo 52002 : Recto
<u>52002V</u>	P. Cairo 52002 : Verso
<u>52003R</u>	P. Cairo 52003 : Recto
<u>52003V</u>	P. Cairo 52003 : Verso
<u>MMAV-RA1</u>	P. MMA 3569 + Vienna 3934+3937+9352 : Recto: Text A, Col. I
<u>MMAV-RA2</u>	P. MMA 3569 + Vienna 3934+3937+9352 : Recto: Text A, Col. II
<u>MMAV-VA</u>	P. MMA 3569 + Vienna 3934+3937+9352 : Verso: Text A
<u>MMAV-RB</u>	P. MMA 3569 + Vienna 3934+3937+9352 : Recto: Text B
<u>MMAV-VB</u>	P. MMA 3569 + Vienna 3934+3937+9352 : Verso: Text B

Table 1 - List of entries in the Saqqara Dossier

The dossier is not presented here in a full translation,¹⁴¹ but is compiled into nine distinct types of text entries (Entries A to I), which I have defined, as this allows for a more immediate introduction to the texts and enables a comparison between the different entry types which all reveal different economic, socioeconomic, and organisational aspects of the documents. These aspects will be dealt with in detail later

¹³⁹ E. R. von Bergmann (1886), *Hieratische und Hieratisch-Demotische Texte der Sammlung aegyptischer Alterthümer des allerhöchsten Kaiserhauses*, 2, pl. VII.

¹⁴⁰ The existence of three check marks on the verso of one of the two P. Vienna 9352 fragments which join together, and the three inverted lines in P. MMA 3569 + Vienna 3934+3937+9352 : Verso: Text A suggest the original existence of another text on the third sheet of the papyrus. This will be referred to as **MMAV-VC**.

¹⁴¹ For the translation of the Saqqara Dossier, see appendix 1.

in the chapter. Entries types A to F are based on P. Cairo 52002 for two reasons: this is the most complete papyrus and it comes first chronologically (see table 2 below). Entries of type G to I are based on P. Cairo 52003 (**52003R** and **52003V**) which follows chronologically. The entries on the MMAV papyrus are all similar to the ones on the two preceding papyri.

52002R: Year 15, Peret 4	52002V: Year 15, Peret 4	52003R: Year 15, Shemu 1	MMAV-RA1: Year 16	MMAV-RA2: (Year 16)	MMAV-VB: Year 16, Akhet season
l. 5 - Day 6	l. 1 - Day 14	l. 1 - Day 9	l. 1 - Year 16	l. 1 - (Year 16)	l. 3 - (Akhet) 2 (?), (day ...)
l. 6 - Day 7	l. 4 - Day 15	l. 4 - Day 10			l. 8 - Akhet 3, day (...)
l. 8 - Day 8		l. 8 - Day 13			l. 10 - Akhet 3, day (...)
l. 9 - Day 9		l. 9 - Day 14			l. 15 – (Akhet 3 (?), day) 12
l. 11 - Day 10		l. 11 - Day 18			
l. 15 - Day 11		l. 14 - Day 19			
l. 16 - Day 12		l. 17 - Day 20			
l. 17 - Day 13					

Table 2 - The recorded dates in the Saqqara Dossier

Table 2 above demonstrates that the recorded dates in the dossier cover no less than 7 months and 6 days, from the arrival of the scribe Buqentuf to Memphis until the last fragmentary entry, which seems to concern a delivery of plaster. The building process would presumably have continued for some time after the last dated entry in the dossier, but must have been documented elsewhere.

2.2.1 - Type A entries

The text passages classified as type A include the overall dating of the document and the location of the king. This type of entry occurs five times and always at the beginning of a text; it thus starts in the first line of **52002R**,¹⁴² **52002V**,¹⁴³ **52003R**,¹⁴⁴ **MMAV-RA1**,¹⁴⁵ and **MMAV-RA2**.¹⁴⁶ The type A entries can be further subdivided into the full formulaic form and the shorthand version. The full formulaic form appears in **52002R**, **MMAV-RA1**, and **MMAV-RA2**, while the shorthand version is used in **52002V** and **52003R**.

The full formulaic form first lists the regnal year and then the royal names of Ramesses III and his connection to the gods Amun, Re, Amun-Re, Re-Horakhty, and Seth. The date of the formulaic form only

¹⁴² Lines 1-3.

¹⁴³ Line 1.

¹⁴⁴ Line 1.

¹⁴⁵ Lines 1-3.

¹⁴⁶ Lines 1-6.

has the regnal year while the shorthand version additionally lists season, month, and day.¹⁴⁷ It is not clear why **52003R** is not introduced with the full formulaic form as it is the beginning of a new document, albeit relatively close in time to **52002R** and **52002V**. The division between **52002R** and **52002V** is made clear by the mention of the location of the king in both and by the fact that that **52002V** records the beginning of the actual construction work. The chronologically gap between **52002V** and **52003R** suggests the existence of a now lost document where the full formulaic form was utilised, and that **52003R** followed immediately after. Similarly, it made sense not to use the formulaic form in **52002V** as it both followed directly after and was physically connected to **52002R**.

Both the formulaic and the shorthand forms in **52002R**, **52002V**, and **52003R** have the information that “on this day One (the king) was to be found in Piramesse”. This is a well-attested introduction¹⁴⁸ which indicates that the author, Buqentuf, was an educated scribe who had learned and perhaps was required to introduce his work in this way.¹⁴⁹ It is at the very least an indication of Buqentuf’s affiliation with the royal palace.¹⁵⁰ Similar references to the king’s whereabouts are found three times on P. UC 32784, describing various activities concerning the daily organisation and administration of the Ramesside palace at Gurob; once on the recto (2;11)¹⁵¹ referring to the ‘house of Seti II in Memphis’, and twice on the verso (1b;1 and 1b;6)¹⁵² both with the reference to Piramesse. The city is further identified with the epithet of “The Great Ka of Re-Horakhty”, which is in three instances in the dossier¹⁵³ further embellished by adding “King of the gods, L.P.H., powerful and strong”.

Displaying the full formulaic form, **MMAV-RA1** is dated to year 16 and specifies that the king was at this time in Heliopolis rather than Piramesse.¹⁵⁴ The remainder of **MMAV-RA2** suggest the same kind of information although the date has been lost. Apart from showing that the king had travelled from one location to the other between the events recorded on the Cairo papyri and the MMA+Vienna papyrus, this also demonstrates that Buqentuf had been informed about it and took note of it. The knowledge and recording of the king’s whereabouts strongly suggests that the construction of the tomb of Mai was done with royal involvement,¹⁵⁵ but whether this included economic sponsorship or privileges is unclear.¹⁵⁶

¹⁴⁷ Compare, for example, P. Bibliothèque Nationale 206 (l. 1-3), which has both the complete date with all three components (year, seasonal month and day) and the formulaic form referring to the king.

¹⁴⁸ It occurs 17 times on 12 other administrative documents from the New Kingdom. Cf. Hagen (2016), 176.

¹⁴⁹ Hagen (2016), 179-180.

¹⁵⁰ Hagen (2016), 176.

¹⁵¹ A. Gardiner (1948), *Ramesside Administrative Documents*, 15: 6.

¹⁵² Gardiner (1948), 17: 12 & 18: 4-5.

¹⁵³ **52002R** (l.1), **52002V** (l. 1), and **52003R** (l. 1).

¹⁵⁴ Referring exclusively to P. Cairo 52002, Eyre notes only two entries with the location of the king. Eyre (2013), 62.

¹⁵⁵ For an overview of other examples of this, see C. Eyre (1987b), “Work and the Organisation of Work in the New Kingdom”, 183-188.

2.2.2 - Type B entries

The B-type entries are best described as the title of the document and they occur only twice in the dossier; in **52002R** (l. 4) and **MMAV-RA1** (rto. l. 4-9). That this type is not found on P. Cairo 52003 (**52003R** and **52003V**) further indicates that this papyrus is a continuation of a preceding document. In both **52002R** and **MMAV-RA1**, the title of the document is describing the purpose of the following text. **52002R** is a record of all the tasks or assignments (*šḥn.w.t*)¹⁵⁷ Buqentuf would be overseeing during the construction of the tomb.

MMAV-RA1 is said to be a roll or document of names (*ʿr.t-īm.y-rm=f*), the purpose of which is to list groups of military personnel, but whether they were connected to the construction site is unclear. The text breaks off multiple times, the first severe break occurs in line 5 and the text resumes with “ploughing the great *khato*-lands (fields) of Pharaoh (6) in the western river”. This is followed by a lacuna after which a mortuary temple (temple of millions of years) belonging to Ramesses III is mentioned. The text then breaks off again, but this may indicate the existence of a temple dedicated to the king located on the “the western river”, possibly the Canopic arm of the Nile.¹⁵⁸ Together with the passages on the *khato*-lands and the groups of military personnel, the text gives the impression that Buqentuf was, in addition to the tomb building project, also in charge of the tilling of land owned by a mortuary temple in the western Delta. The task of tilling seems to have been performed by the mentioned soldiers and sailors, probably while they were not on regular military duty. The text resumes and breaks off several more times, giving clues to people and places which may have been directly involved in the construction process or the sponsoring of it, in particular a possible stable master of the army whose name is partly preserved as ‘Rekh’ but otherwise lost, and an army scribe (*šš mšʿ*), named Naherhu.¹⁵⁹ Both men are mentioned in lines 7 and 8 and their affiliations suggest the involvement of the military in the tomb building project. As Mai was a general of the army, these men may have been under his authority.

2.2.3 - Type C entries

This entry type is found only once, in **52002R** lines 5-8, and describes the unique set of complications that Buqentuf had to deal with at the beginning of the project. He describes how he arrived at the village of Memphis to return the document of the officials by handing it back to them, i.e. the same officials (*r dī.t t3 šʿ.t (n) n3 sr.w n=w*). This could mean that Buqentuf is returning paperwork or an application for the permit

¹⁵⁶ Hagen (2016), 176.

¹⁵⁷ Eyre (2013), 170, translates ‘commission’ or ‘task’.

¹⁵⁸ As an alternative to the Canopic arm an argument could be made for the canal of Bahr Libeini; see 2.5 below.

¹⁵⁹ Cf. H. Ranke (1935), *Die Ägyptischen Personennamen*, 170, 3.

to build a tomb, which required royal approval.¹⁶⁰ Buqentuf having come straight from Piramesse would explain how he knows the location of the king,¹⁶¹ and this may have consequences for our understanding of Egyptian administration and bureaucracy, not only regarding tomb construction, but on a general level. On the other hand, there is the possibility that Buqentuf was simply delivering a letter or similar¹⁶² as he was in Memphis anyway and that it had nothing to do with the tomb project. I would argue against this, however, and point to the title line above (see type B entries) which claims to be a record of things to be done at the building site. It seems unlikely that Buqentuf would have already forgotten this, as the first 5 lines of the papyrus are written as one entry. I base this assumption on the last words of line 5: “Spent the night in this place” (*sḏr m s.t tn*), which refers to Memphis.

What follows is difficult to fully understand as it presumes knowledge of the ancient societal hierarchy and the personal relations between the individuals that are mentioned in the text. The pivotal person is a chantress of Thoth named Ta-Renenut. She first arrived in Memphis in the evening of the day when Buqentuf went to Saqqara, and she came to ‘represent’ or possibly ‘mourn’ (*nḥp*) the vizier, who is not named here but could be the well-known vizier Hori who served Ramesses III.¹⁶³ The following day, Ta-Renenut also went to the building site to inspect the site. The meaning of the word *nḥp* is crucial here, because while inspecting, Ta-Renenut clearly had objections regarding the work and gave instructions to the workers for the further stages of construction.¹⁶⁴ This suggests the use of the word as ‘represent’. It seems that the workers were to be shared between the tomb building projects of the vizier and of general Mai, and that Ta-Renenut was making sure that the workers finished the tomb of the vizier before starting on the next tomb under the supervision of Buqentuf. This interpretation fits well with the following entries of the text.

2.2.4 - Type D entries

This type of entry concerns the procurement of food and various sorts of equipment. It occurs 3 times in the dossier; in **52002R**,¹⁶⁵ **MMAV-RB**,¹⁶⁶ and **MMAV-VB**.¹⁶⁷ In **52002R**, Buqentuf set off on a five-day

¹⁶⁰ Posener-Kriéger (1981), 57. For a discussion on the use of a document (*ḥr-ḥ*) as granting authority in the Old Kingdom necropolis see V. Chauvet (2007), “Royal Involvement in the Construction of Private Tombs”, 316-317.

¹⁶¹ Cf. Hagen (2016), 175.

¹⁶² R. J. Demarée (2008), “Reports on Tomb-Construction at Saqqara in the New Kingdom”, 8. In *Saqqara Newsletter* Vol. 6, 7-10.

¹⁶³ Posener-Kriéger (1981), 54 (n. w) and 58. Also confer A. Weil (1908), *Die Veziere des Pharaonenreiches*, 113; and W. Helck (1958), *Zur Verwaltung des Mittleren und des Neuen Reiches*, 328-329.

¹⁶⁴ T. A. Bács (2015), “Some Aspects of Tomb Reuse During the Twentieth Dynasty”, 3, suggests that Buqentuf and his workers were encroaching on the tomb of the vizier. See also 2.3.2 below for further discussion of *nḥp*.

¹⁶⁵ Lines 9-17.

¹⁶⁶ Lines 3-6.

¹⁶⁷ Lines 7-14.

acquisition trip which may have been the result of the confrontation with Ta-Renenut the previous day. It is unclear whether Buqentuf leaves of his own accord, as to not waste his time waiting for the workers to finish the tomb of the vizier, or on a direct order from the chantress. However, while Buqentuf is underway he also procures rations on behalf of Ta-Renenut, which seems to support the latter option. Furthermore, the rations come from the house (estate) of a certain Hori,¹⁶⁸ who may be the abovementioned vizier,¹⁶⁹ i.e. the owner of the tomb that has to be finished before Buqentuf can get any of his work done. Here he also obtains a rope of 160 cubits for demarcating the building site in Saqqara.¹⁷⁰

After visiting the house of Hori, Buqentuf visits the house of the general (*sšp=f m p3 pr n p3 imy-r-mšꜥ*), presumably Mai, and receives 2 copper spikes or chisels and 2 good ropes of 25 cubits length each (for further discussion of these materials see 2.6 below). It should be pointed out that Buqentuf visits both the house of Hori and the house of the general on the same day, which indicates a close proximity of the two estates, which would further point to a closer relationship between the two men and perhaps offer an explanation for the role of Ta-Renenut. It also illustrates the difficulties in distinguishing between private and official resources in ancient Egypt, which may, as Eyre points out, be an unrealistic and perhaps unnecessary modern endeavour.¹⁷¹

On Buqentuf's journey he also procured a young donkey for the building site, presumably for use in transport of water and other materials. Finally, Buqentuf describes the journey back and the transport of the rations to a storehouse and the returning of the boat that he had borrowed or rented at the beginning of the journey.

The entry in **MMAV-RB** concerns the procurement of materials: First, a large quantity of plaster from a now lost source (l. 1-3). Secondly, the preserved text mentions the delivery of a large quantity of plaster specifically for Buqentuf, and the arrival of a transport boat on which various items, such as onions, reeds (*g3š*),¹⁷² and sandals, were stored (l. 4-6). The entry in **MMAV-VB** mainly deals with the transport of stone blocks on an unspecified boat (see 2.5 below), listing their measurements or size.

¹⁶⁸ The text says that the rations were received from the scribe Bes and an unnamed guardian of the house of Hori (*m-di sš bs s3w pr ḥri*). I interpret this to mean that Buqentuf visited the house/estate of Hori rather than simply receiving the rations on the boat.

¹⁶⁹ Posener-Kriéger (1981), 58.

¹⁷⁰ For a description of Egyptian ropes, see Arnold (1991), 268-269.

¹⁷¹ Eyre (1987b), 197.

¹⁷² These reeds were possibly meant to be used as fuel. Hannig (2006), 965, suggests "Wildes Zuckerrohr" (*Saccharum spontaneum* / *aegyptiacum*), but this is not possible as sugar canes were not introduced in Egypt until the 8th century AD. Cf. J. H. Galloway (1989), *The sugar cane industry: An historical geography from its origins to 1914*, 24.

2.2.5 - Type E entries

Type E entries concern the preparation of the construction site and occur twice in the dossier: in **52002V**¹⁷³ and in **52003R**.¹⁷⁴ In **52002V**, the beginning of the construction work for the tomb of Mai is recorded. It starts with clearing or cleaning (*hmʿ*)¹⁷⁵ in the area that will become the forecourt of the temple tomb.¹⁷⁶ Buqentuf then notes the result of the day, which is 12 cubits by 6 cubits by 3 cubits in what is probably a volume of sand, but which the scribe incorrectly adds together as a total of 21 cubits. In any case, the work continues the next day, which is labelled as the second day of clearing. Although he clearly meant to, Buqentuf did not specify the total amount of work for the second day. The clearing work probably went on for some time, but whether it was a continuous process is unclear. By the 15th day of tasks, line 2 on **52003R**, clearing had been performed but the result of it was again not recorded. The next day is the 16th day of tasks, but here Buqentuf prepares to record not what was achieved as clearing (*hmʿ*) but what was done as work or labour (*h3kw*). It is possible that the workers on this day started with other types of work than clearing. The result is again not written down.

2.2.6 - Type F entries

The F-type entries that concern preparation of or drafts for letters are found three times in the dossier, and all on the verso side of their respective papyri: in **52002V**,¹⁷⁷ **52003V**,¹⁷⁸ and **MMAV-VA**.¹⁷⁹ The single line on **52002V** is written upside down compared to the rest of the verso, but it is not clear what its purpose was in the first place. Posener-Kriéger pointed out that line 5 of the verso seems like an address to the extent that if the papyrus is folded twice, line 5 is in the top right like the address of a letter.¹⁸⁰ However, the line could also be the addition of an element from line 1 of **52002V**, which Buqentuf noticed was missing upon review of the text. This interpretation fits with the notion of the dossier being the personal notes of Buqentuf.

52003V is a draft of greetings that presumably was intended for the beginning of a letter to general Mai (lines 1-3). It has the structure and wording that is common in letters from the New Kingdom.¹⁸¹ Buqentuf

¹⁷³ Lines 2-4.

¹⁷⁴ Lines 2-5.

¹⁷⁵ J. van Dijk proposed the translation of *hmʿ* as “clearing the terrain”, which “probably implied the demolishing of earlier structures”. Cf. J. van Dijk (1993), 25, n. 46.

¹⁷⁶ I make the presumption that the ground plan of the tomb of Mai resembles that of the New Kingdom temple tombs so far excavated at Saqqara, e.g. those of Maya, Tia, and Horemheb of the 18th Dynasty or Nebnefer, Ptahmose, and Amenemone of the 19th Dynasty – cf. N. Staring (2016), “The tomb of Ptahemwia at Saqqara”. In *JEA* 102, 145-170.

¹⁷⁷ Line 5.

¹⁷⁸ Lines 1-8.

¹⁷⁹ Lines 1-12.

¹⁸⁰ Posener-Kriéger (1981), 49.

¹⁸¹ Cf. ‘A. Bakir (1970), *Egyptian epistolography from the eighteenth to the twenty-first dynasty*, 45 and 85.

also wrote a greeting formula for the king (lines 4-7), but the information meant for the king was not written down and the remainder of the verso of the papyrus below **52003V** was left blank. This suggests that the lines were a draft for the preamble of a letter and that the content was written elsewhere.

The lines of **MMAV-VA** are formulaic in style and invoking the gods. Lines 1 and 2 appear to have been identical, mentioning the title 'Fan-bearer on the Right Side of the King' (*t3y-hw hr wnm t n nsw*) before breaking off. As Mai is attributed the same title in **52003V**, he was possibly also addressed here, but being a relatively common honorific title, a number of officials could have been addressed,¹⁸² including the vizier. It is unclear whether this is the beginning of the greeting that continues in lines three and four, or if the titles were designations for two different persons. **MMAV-VA** differs from **52002V** and **52003V** in that it before breaking off contains part of a message concerning the words of a stable master (*hr t3 md.t n hry ih*).¹⁸³

2.2.7 - Type G entries

This entry type, which can be labelled 'disrupting business', occurs only once in the dossier: in **52003R**.¹⁸⁴ It is a curious insert that is neither explained nor followed up later in the dossier. It mentions a labourer, Ptahmose,¹⁸⁵ who took (stole?) or delivered a document or assignment concerning some work from a boat owned by a man named Ipa (*it3y w^c wp.t m-r^c b3k dp.t ip3*). There is no explanation of what kind of document is meant or why Ptahmose took or delivered it.¹⁸⁶ He is, however, specifically identified: he is called Pakharu (the Syrian),¹⁸⁷ he is the son of a Pendua,¹⁸⁸ who was from the 'the high ground of Memphis' (possibly Saqqara), which is said to be by the great canal of Baenre, Beloved of Amun (Merenptah).

2.2.8 - Type H entries

Type H entries concern the establishment of an access road on which to transport the heavier elements needed for the tomb and they occur twice in **52003R**.¹⁸⁹ The first occurrence records day 13 and 14 of the

¹⁸² See 4.2.1 below.

¹⁸³ Lines 9-10, and possibly also lines 11-12.

¹⁸⁴ Lines 6-7.

¹⁸⁵ **52003R**, l. 6. Cf. Ranke (1935), 140, 9.

¹⁸⁶ A possible parallel may be found in P. Ambras from year six during the reign of Ramesses XI where officials are said to be buying documents back from ordinary people (l. 1-2). The documents were possibly stolen as part of the tomb robberies that occurred in the reign of Ramesses IX and important enough for the officials to search for. See T. E. Peet (1930), *The great tomb-robberies of the 20. Egyptian dynasty*, 177-182, pl. XXXVIII.

¹⁸⁷ Cf. Cf. Ranke (1935), 116, 17.

¹⁸⁸ The name does not occur in Ranke.

¹⁸⁹ Lines 8-13 and 17-18

first month of Shemu (Shemu 1), the second and third days of “preparing the ground” (*trr*),¹⁹⁰ which after the latter entry is followed by the result of the work of the day. The result was recorded as a two-dimensional measurement of length and width in cubits. Unfortunately, the papyrus is damaged and the length is lost, but the width built or prepared was noted to be four cubits and three palms, about 2.33 metres. The next line, recto 11, records day 18 of Shemu 1 and the sixth day of “preparing the ground”. The lacuna just before this is not large enough to have accommodated a description of the days in between and it seems Buqentuf simply skipped over these days, perhaps because the work was the same or perhaps because he was absent. This means that the workers would have had a day off or that they were doing some other task in the unaccounted-for days, because if one extends the pattern, day 18 should have been the seventh day of “preparing the ground”, not the sixth. Either way, a new daily total is noted; 12 cubits in length, i.e. 6.3 meters, and five cubits and five palms in width, which is exactly three meters.

The second occurrence of this type, lines 17 and 18, describes the ninth day of “preparing the ground” on day 20 of Shemu 1. However, this does not add up as day 18 of Shemu 1 was the sixth day of “preparing the ground”, which means that day 20 of Shemu 1 can only be seventh or eighth day of this task.¹⁹¹ It was, however, done in a new location; the “central room” (*nfrw*). This information is followed by the result of the day’s work, not as a measurement of area but of volume; 13 cubits by six cubits by four cubits (45.15 m³). It is unclear what material is measured, for example rock or sand, but the workers must have removed a substantial amount of it.¹⁹² It is again unclear whether this was achieved on day 20 alone or if it was an accumulative result of many days.¹⁹³

2.2.9 - Type I entries

This type of entry relates to actual construction work and is found three times in the dossier: once in **52003R**¹⁹⁴ and twice in **MMAV-VB**.¹⁹⁵ In **52003R**, Buqentuf recorded the 19th day of Shemu 1 and labelled it as the ‘eighth day of stone building in the wall (or house)’ (*mḥ hrw 8 ḳd inr m pꜣ inb/pr(?)*), presumably referring to a structure in connection with the chapel part of the tomb.¹⁹⁶ Two things should be pointed out: first, there is no mention of building in stone before this day and, second, this activity had been going on while the access road was being prepared. In fact, the workers continued the preparation of the ground

¹⁹⁰ J. van Dijk (*op. cit.*, 25.) proposed the translation of *trr* as “levelling the bedrock with a layer of rubble”.

¹⁹¹ Cf. Posener-Kriéger (1996), 660.

¹⁹² 45.15 m³ of sand (density of 1.6 tons / m³) weighs approximately 73 tons.

¹⁹³ In the Senenmut ostraca (see chapter 3) work is usually recorded in daily results, but in the ostraca from TT 29 it is done on a monthly basis.

¹⁹⁴ Lines 14-16.

¹⁹⁵ Lines 1-6 and lines 15-16.

¹⁹⁶ Cf. Demarée (2008), 9.

the next day on day 20 (see type H entries above). The building of a stone structure confirms that the “preparing the ground” (*trr*) was not the foundation work for the chapel because it was continued afterwards and therefore much more likely the access road.

At the end of line 14 of **52003R** Buqentuf writes ‘seven cubits’, which is an unusual addendum and it is not clear to what it refers. It should probably be read as the result of the word before, which seems to be “built” (*ḳd*).¹⁹⁷ It is not clear what had been built, but evidently something in stone blocks. The next line has the entry “What was done in stone building this day” (*iry.t m ḳd inr m hrw pn*) followed by a record of eight stone blocks (*inr ḳb.t*)¹⁹⁸ and the specification of the size of the blocks, being two cubits and five palms in length by one cubit and two palms in width by six palms in thickness. This means that they would have weighed around 1100 kg each,¹⁹⁹ thereby explaining the need for dragging them to the building site.²⁰⁰

The last bit of line 15 is the number 12, but the relation to the next line is not clear, as line 16 starts with a preposition (*hr*). As most other scribes, Buqentuf usually wrote his numbers after what was counted: years, months, days, cubits, palms, deben, ropes, etc. This is missing here. A new entry for blocks of stones or workmen was perhaps intended. If the latter option was intended, the transcription by Kitchen²⁰¹ fits better: “12 (men) carrying bricks. Total: Bricks (number not written)” (12 *hr.y t3 ḳb.t dmd ḳb.t*). These bricks would then be a different size than the eight blocks from before,²⁰² unless *hr.y* here means “dragging”.

The fragmentary and damaged **MMAV-VB** is dated to year 16, Akhet 2, the precise day is lost. Following the date (type A entry) is an incomplete entry about cutting stone (*š.t inr*) and a reference to breaking through (*wtn*) something in the tomb (*m t3 ḥ.t*), and then an entry possibly about lowering (*whi*) the sarcophagus (*t3 ḳb3.t ḥtp*). After these incomplete lines follows a coherent passage in lines 5 and 6. Here, stone cutting was continued and the size of the blocks was recorded: one cubit and two palms in length by four cubits in width by one cubit in depth. Such a block of stone would weigh about 2000 kg.²⁰³ However, the number of blocks is not listed and it is possible that the text refers to the cutting away or extraction of stone from the

¹⁹⁷ Posener-Kriéger (1996, 660) also has this translation.

¹⁹⁸ *ḳb.t* is usually translated as “brick”, but given the size here I translate “block”.

¹⁹⁹ 2 cubits and 5 palms (142.5 cm) x 1 cubit and 2 palms (67.5 cm) x 6 palms (45 cm) = 0.433 m³. This multiplied by the density of limestone, which is between 2600 and 2800 kg/m³, gives a result of either 1125.8 kg (0.433 x 2600 kg/m³) or 1212.4 kg (0.433 x 2800 kg/m³). The average is 1169.1 kg, which I have here rounded down to 1100 kg. For the density of limestone see, O. V. Rasmussen (2003), *Kemiske og Fysiske Tabeller* (Chemical and Physical Charts), 56.

²⁰⁰ During the excavation of the tomb chapel of Paser only two limestone slabs were recovered which measured 48x48x10 cm and 48x46x10 cm, i.e. weighing about 60 kg each. G.T. Martin (1985), *The Tomb-Chapels of Paser and Ra'ia at Saqqâra*, 6, suggests that because of the convenient size the rest of the slabs were reused elsewhere.

²⁰¹ Kitchen (1989), 267.

²⁰² Posener-Kriéger (1996), 662, also points this out.

²⁰³ 1 cubit and 2 palms (67.5 cm) x 4 cubits (210 cm) x 1 cubit (52.5 cm) = 0.744 m³. This multiplied by the density of limestone (between 2600 and 2800 kg/m³) gives a result of either 1934.4 kg (0.744 x 2600 kg/m³) or 2083.2 kg (0.744 x 2800 kg/m³) or. The average is about 2000 kg.

Saqqara bedrock, e.g. when the shaft of the tomb was excavated. This would work equally well with the following text which records “Done in carrying/removing/clearing (or building) stones this day” (*ir.y.t m hm^c inr.w m hrw pn*), followed by the measurement of one cubit and three palms. The clarification of this in line 6 is unfortunately lost, but the exact meaning of *hm^c* is evidently important as it is here used in connection with stones and not referring to clearing rubble as elsewhere in the dossier.²⁰⁴

The last part of the I-type entries are the last two lines of **MMAV-VB** which are badly preserved. While clearly dealing with construction, the content is difficult to understand but includes the numbers 300 and 40, possibly ending with the mention of 551 vessels with plaster which presumably were being either delivered or applied to the tomb walls as seen in the tombs of Maya and Meryt,²⁰⁵ Paser,²⁰⁶ Pay and Raia,²⁰⁷ Iniua,²⁰⁸ and Meryneith.²⁰⁹

2.2.10 - Comparison

The above descriptions of the types of entries in the dossier are meant as a short introduction to the texts and the information they contain. The approach of dividing the texts into types across their respective papyrus sheets further helps illustrate the topics that Buqentuf was concerned with recording in writing. The current preservation of the three available papyri, P. Cairo 52002, P. Cairo 52003, and P. MMA+Vienna, includes 106 lines of text.²¹⁰ The distribution of the number of lines across the nine entry types are illustrated in figure 5 below.²¹¹

²⁰⁴ The term also occurs as clearing rubble in relation to tomb construction in Thebes during the 18th Dynasty. See chapter 3 below.

²⁰⁵ G.T. Martin *et al* (1988), “The Tomb of Maya and Meryt: Preliminary Report on the Saqqâra Excavations, 1987-8”, 4.

²⁰⁶ Martin (1985), 4+8.

²⁰⁷ M. Raven (2005), *The Tomb of Pay and Raia at Saqqara*, 15.

²⁰⁸ H. D. Schneider (2012), *The Tomb of Iniua in the New Kingdom Necropolis of Memphis at Saqqara*, 31 and 34-35.

²⁰⁹ M. Raven & R. Van Walsem (2014), *The Tomb of Meryneith at Saqqara*, 60.

²¹⁰ This includes three lines of the proposed **text 12** of which only the end of each is preserved.

²¹¹ The distribution of lines is as follows: **Type A** (Dating and location of the king) = 14 lines ; **Type B** (Title) = 7 lines ; **Type C** (Complications) = 4 lines ; **Type D** (Procurement of supplies and materials) = 21 lines ; **Type E** (Preparation of the worksite) = 7 lines ; **Type F** (Communication) = 21 lines ; **Type G** (Disruption of work) = 2 lines ; **Type H** (Establishment of road) = 8 lines ; **Type I** (Construction work) = 11 lines ; Unknown entries = 11 lines (the three lines of **text 12** are included here).

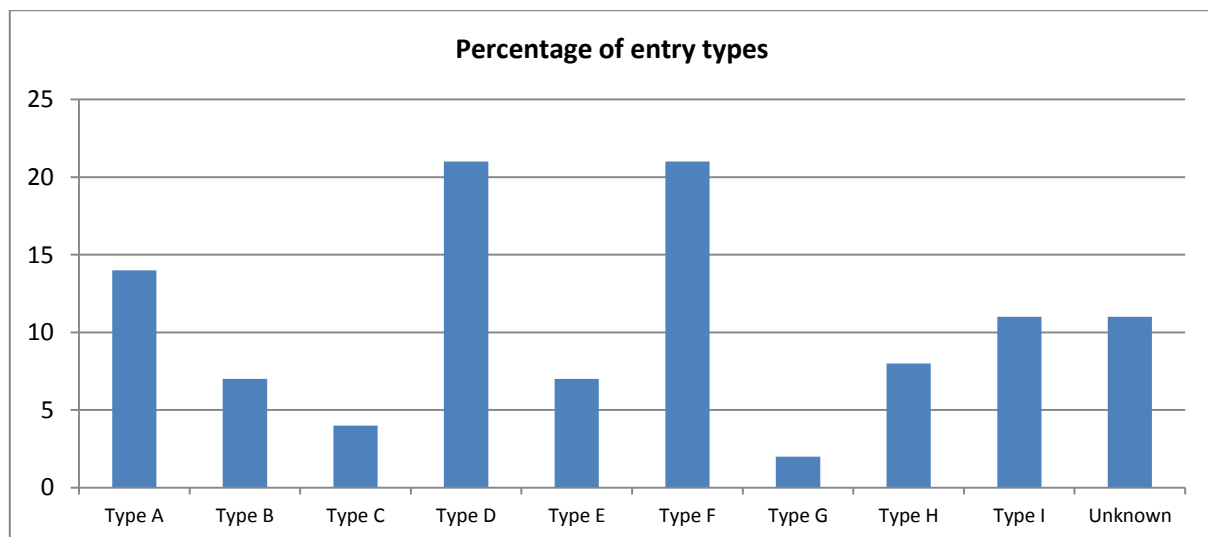


Figure 5 - The percentage of lines used by each entry type.

Buqentuf dedicated two fifths of the available space on the surviving papyri to recording the acquisition of supplies and building materials (entry type D) and preparing letters for his superiors (entry type F). The latter activity may be connected to the considerable amount of lines keeping track of the king's whereabouts when dating the entries. The recording of actual work on the tomb, entry types E, H, and I combined, only amount to about a quarter of the lines further suggesting that Buqentuf had other priorities in what he recorded than the construction of the tomb.

The difficulty in interpreting these observations lies in the definition of the entry types, created from a modern point of view, based on differences in the information the entries contain. However, figure 1 does demonstrate how much space was used for each of the entry types in the available papyrus material and at the very least suggests an interpretation of the writing priorities of Buqentuf over the course of seven months. It also indicates that the dossier to a large degree was the personal notes of Buqentuf, not meant to be read by others, but possibly to be synthesized into other official documents. The presence of a number marks or strokes at the beginning of most of the lines that concerns tomb construction further indicates this notion and Buqentuf seems to have gone over the text checking the information within.²¹²

2.3 - People

2.3.1 - Buqentuf

Although never stated explicitly, Buqentuf is in all probability the writer of the four papyri and by extension the man in charge of the tomb building project. He is thus of vital importance in understanding the tomb

²¹² The check marks occur in 52002R I. 2-14, 52003R I. 1-16, and MMAV-VB I. 2-16.

construction process. The name Buqentuf is common according to Posener-Kriéger,²¹³ although not many individuals with this name can be directly identified.²¹⁴

Buqentuf seems to have been connected to the royal administration and he appears to have been responsible for more than just the tomb building project.²¹⁵ Throughout the texts, Buqentuf does not refer to himself as anything other than a scribe (*šš*), but it is clear from the function he fulfils, e.g. collecting resources and gathering workers, that he was indeed responsible for more than simply recording the building process. Buqentuf also seems to have been in charge of soldiers and military personnel working the *khato*-lands belonging to a royal mortuary temple in the western delta. He was evidently responsible for the building project at Saqqara on behalf of general Mai and as such has a clear connection to this person and his estate or household, which Buqentuf visits when collecting equipment.

The abovementioned *khato*-lands were possibly part of Mai's estate and as such they could have been worked by soldiers and army personnel of which Mai would have had command. This would explain the mention of seemingly unrelated business in a text that also concerns the continued building of the tomb. In this interpretation, Buqentuf was fulfilling the role of an estate keeper or administrator.²¹⁶ The text of the Saqqara Dossier suggests that Buqentuf had had training in both reading and writing,²¹⁷ and at a relatively high level.²¹⁸ He was likely an experienced scribe/administrator and the dossier gives the distinct impression that he had been sent to Saqqara to solve the issues with the tomb project, which was already underway when Buqentuf arrived. He seems to have been responsible for administering several tasks, and while he was at Saqqara he also wrote drafts of letters in which Buqentuf intended to let Mai know that everything was proceeding to plan.²¹⁹ The message in **MMAV-VA** is mostly lost, but the preserved passages concern a previous communication that Buqentuf acknowledges having received (l. 7). His response includes an issue concerning two named stable masters (*ḥry ḥw*) (l. 8-10) but is otherwise lost.

²¹³ Posener-Kriéger (1981), 53. Also cf. Ranke (1935), 94.18.

²¹⁴ A simple name search reveals 60 results in the Deir el-Medina Database, all of which seem to be referring to one or two workmen of the village during the 19th Dynasty and another during the 20th Dynasty. See also B. G. Davies (1999), *Who's who at Deir el-Medina*, 289, where only three men bearing the name are listed. The name also occurs on a stela (NME 28, lower register columns 3-4) now in Medelhavsmuseet, Stockholm, which belongs to a certain Nakhy, who is the father of a Buqentuf. Cf. M. Mogensen (1919), *Stèles égyptiennes au Musée National de Stockholm*, 45-46.

²¹⁵ Posener-Kriéger sees Buqentuf as being employed by the king. Posener-Kriéger (1996), 661, n. 'e'.

²¹⁶ Buqentuf is referred to as an administrator by Demarée (2008), *op. cit.*, 7, and as an administrator and accountant-cum-administrator by H. Navratilova & N. Allon (2017), *Ancient Egyptian Scribes: a cultural exploration*, 60.

²¹⁷ For a comprehensive study on writing in ancient Egypt and the Egyptological creation of 'the scribe' see Pinarello (2015), *op. cit.*, in particular chapter 5, 117-154.

²¹⁸ The neatness with which the texts of the dossier is written suggests an author used to writing. The same can be said of both the Senenmut ostraca (see 3.2 below) and the Deir el-Medina daybook ostraca (see Eyre (2013), 247).

²¹⁹ **52003V**, l. 3.

The letters show that Buqentuf was in regular contact with his superiors and was probably expected to report not only on the progress of the building project but also on his other duties. The fact that the letters, or rather letter drafts, were written alongside the work journal for the tomb construction indicates that the dossier most likely functioned as Buqentuf's personal notebook. This interpretation is further supported by the presence of the abovementioned check marks which show that Buqentuf went over his notes again, line after line, checking the information and possibly transferring it to another document.²²⁰

2.3.2 - Ta-Renenut

The chantress of Thoth, the woman Ta-Renenut, is mentioned three times in **52002R**, lines 7, 8, and 9, and once in **MMAV-VB**, line 11. Her role within the dossier is not easily understood as it to a large degree depends on the meaning of the word *nḥp* in line 7 of **52002R**. The name *T3-Rnnw.t* is also not a common one and is not found in Ranke's *Personennamen*.²²¹ Nevertheless, it is attested at Deir el-Medina²²² and on a stela now in the George-Labit Museum in Toulouse. In the latter instance, the woman to whom the name belongs is labelled a chantress of Amun.²²³ Although there can be no doubt about the reading of the name in the dossier, Posener-Kriéger argues that it may be a variant of the well attested name *Rnnw.t*.²²⁴

The title of Ta-Renenut, "singer/musician/chantress/songstress" (*šmꜣyt*), is well attested from the New Kingdom in relation with many different gods.²²⁵ The relation to the god Thoth relatively rare compared to those relating, for example, to the god Amun.²²⁶ Two chantresses of Thoth are attested in 18th Dynasty

²²⁰ In a similar way, P. UC 32166, a list of household members from the Middle Kingdom town of Lahun, display check marks in the form of dots rather than strokes. M. Collier & S. Quirke (2004), *The UCL Lahun Papyri: Religious, Literary, Legal, Mathematical and Medical*, 116-117.

²²¹ It may occur during the Ptolemaic period as a name (*t-rnn.t*) for the mother cow of the sacred Apis bull that had died in year 6 during the reign of Ptolemy VII/VIII. See H. Brugsch (1884), "Der Apis-Kreis aus den Zeiten der Ptolemäer: nach den hieroglyphischen und demotischen Weihinschriften des Serapeums von Memphis", 125. In *ZÄS* 22, 110-136.

²²² Davies (1999), 2.

²²³ Cf. P. Ramond (1977), *Les Stèles Égyptiennes du Musée G. Labit à Toulouse*, Bibliothèque d'études LXII, 54, pl. XI.

²²⁴ Posener-Kriéger (1981), 54.

²²⁵ Cf. Porter & Moss (1962), vol. 5 Upper Egypt for holders of similar titles: p. 29, "songstress of Osiris", Ankhes (Dyn. XX); p. 61, "- of Seth", Rennu (Dyn. XIX); p. 54, "- of Isis", Pathau (Dyn. XX); p. 75, "- of Khentamenti", Neferetiuti (Dyn. XXX); p. 104, "- of Amun-Re", Isty; p. 111, "- of the temple of Hathor", Mutiretdis (Dyn. XXV); p. 161, "- of Monthu", Raia (Dyn. XIX or XX); p. 212, "- of Re", Ray; and p. 53, "the cemetery of songstresses" (Dyn. XX). Also see Porter & Moss (1934), vol. 4 Lower and Middle Egypt, p. 35 - "- of Neith", Amiy (Dyn. XXIV-XXVI); p. 63, "- of Re-Horakhete", Ankhesenset (Ptolemaic) and "- of Amun", Tataia (Dyn. XIX); p. 113, "- of Amun-Re", Ry; p. 37 - "chief songstress", Semset. S. Quirke (1999), "Women in Ancient Egypt: Temple Titles and Funerary Papyri", 229, suggests that the chantress is also the sistrum-player within the temple cult. For a comprehensive study on the title, see S. Onstine (2005), *The Role of the Chantress (šmꜣyt) in Ancient Egypt*, BAR International Series 1401.

²²⁶ There are 14 women attested with the title referring to Thoth, all except one (451) date to the New Kingdom. Cf. Onstine (2005), Chart 7: Reference List, 98-140 (numbers: 65; 67; 99; 100; 276; 283; 451; 458; 462; 595; 596; 694; 760; and 830).

private Theban tombs, namely Mut-Iry, the wife of Tjanuny, owner of TT 74,²²⁷ and Meryt, the mother of Suemniwt, owner of TT 92.²²⁸

As seen in section 2.2.3, the role of Ta-Renenut in connection to the tomb building project is not entirely clear and the reason for Buqentuf to include her in the dossier seems to revolve around the meaning of *nhp*.²²⁹ A translation of the word meaning ‘to represent’ seems to fit in this specific context, i.e. that Ta-Renenut came to Memphis in order to act on behalf of the vizier in some capacity, because of her words towards the workers and because Buqentuf seems to defer to her. This does not, however, explain the determinative of the word which is the *eye with a painted lower lid* (Gardiner D7). The determinative rather suggests a translation of *nhp* as ‘to mourn’ or ‘to grieve’, which could be interpreted as Ta-Renenut having come to mourn the vizier, who presumably had died recently. This would partly explain Ta-Renenut’s insistence on finishing the tomb (of the vizier) the next day before Buqentuf can utilise the workmen for his own purposes. The translation of *nhp* as ‘to mourn’ possibly suggests a personal relationship between Ta-Renenut and the vizier.²³⁰ Whether this meant a blood relation is uncertain.²³¹ Nevertheless, the already mentioned chantress of Amun, also named Ta-Renenut, is described as the daughter of the owner of the stela in Toulouse, a man named Hori.²³² This man has the title of general (*imy-r mšꜣ*) and not vizier (see 2.1.4 above), but the stela is dated to the reign of Ramesses III.²³³ If nothing else, the father and daughter on the stela could be a parallel for persons with the same names in the Saqqara dossier.

Whether or not *nhp* is supposed to be understood as ‘represent’ or ‘mourn’, Ta-Renenut still acted on behalf on the vizier with the intention, it would seem, to make sure that his tomb was finished before the workmen could be handed over to Buqentuf. It is very likely Ta-Renenut who suggests, or perhaps even orders, Buqentuf to journey to the village of Pakakem to acquire various kinds of equipment and to bring rations specifically for the workmen under Ta-Renenut’s authority.²³⁴ As Buqentuf records the collection of rations, consisting of 58 *khar* and 3 *oipe*, from the house of Hori as the first entry after having reached the village of Pakakem (line 11), this seems to be the primary purpose of the journey.

²²⁷ Urk. IV, 1009-1011. For further details see S. Whale (1989), *The family in the eighteenth dynasty of Egypt, a study of the representation of the family in private tombs*, case 77.

²²⁸ Urk. IV, 1451. Also cf. Whale (1989), 178.

²²⁹ See for example the translation Lesko (1984), 23: “to care for, to grieve, to keep busy, to engage in”. See also the comments by Posener-Kriéger (1981), 54 n. v.

²³⁰ Posener-Kriéger (1981), 58; Demarée (2008), 8.

²³¹ Of the six viziers of the 18th Dynasty associated with Theban tombs, at least four had a close kin relation to one or more chantresses: One daughter of User-Amun (TT 131 & TT 61), three daughters of Rekhmire (TT 100), the wife of Ramose (TT 55), Merytpah, and the wife of Hepu (TT 66), Rennay, were all chantresses of Amun (*šmꜣyt n(t) imn*). Cf. Onstine (2005), 90 and 93.

²³² Ramond (1977), 51-54, pl. XI.

²³³ J. Malek (2012), *Topographical bibliography of ancient Egyptian hieroglyphic texts, statues, reliefs and paintings VIII: objects of provenance not known. Part 4: stelae*, 179; 803-050-724.

²³⁴ Line 9.

2.3.3 - Scribes

The two estates that Buqentuf visits in Pakakem each seem to have had a scribe in charge of activities, at least for the materials that were handed over to Buqentuf. At the estate of Hori, it is a man named Bes,²³⁵ who is assisted by an unnamed guardian (*ḥrty*). The scribe who Buqentuf deals with in the estate of the general, a man named Neferabu,²³⁶ seems to have worked alone. Neither Neferabu nor Bes occurs again in the dossier nor indeed elsewhere, but they may be considered administrators on a practical level of the estates, presumably keeping a record of the daily activities on par with what Buqentuf did in his journal.

At the estate of Mai, Buqentuf receives two ropes and copper for two chisels, worth 12 deben. The latter is specifically noted as being for a stonecutter (*ḥrty*)²³⁷ named Ramose,²³⁸ who is otherwise unattested in the dossier. The entry does indicate the presence of specialised labour on the worksite at Saqqara.²³⁹ In line 14 of **52002R**, Buqentuf recorded the acquisition of a young donkey for the building project from a scribe named Khamdjedu.²⁴⁰ He is presumably not part of the estate of Mai or at least not the same part as Neferabu, but neither is Khaemdjedu specified to be, for example, a scribe of the stables or similar. As no payment is mentioned in any of the three instances, some form of credit notation must have been performed. The acquisition of materials from the two estates was presumably based on an existing agreement: either Buqentuf was known to the people of the estates or he carried some form of identification or other evidence that enabled him to procure the necessary items, undoubtedly recorded by the estate scribes. Perhaps the acquisition of the donkey from Khaemdjedu was done on similar terms and the estate of Mai compensated the unaffiliated scribe for it. Alternatively, Buqentuf may have carried copper *deben* or similar in sufficient quantity for a purchase of a donkey, which in Deir el-Medina during the reign of Ramesses III had a price of approximately 30 *deben*.²⁴¹

2.3.4 - Number of workmen

The team of workers who were building the tomb of Mai at Saqqara is never specified in absolute numbers, making the recorded work progress difficult to assess. Nevertheless, the amount of grain brought from the

²³⁵ **52002R**, l. 11. Cf. Ranke (1935), 98, 14.

²³⁶ **52002R**, l. 13. The name does not occur in Ranke with the determinatives (Gardiner W3 and N5) used in this instance.

²³⁷ The title is also found several times in the Senenmut ostraca, where it refers to work having been done on stone (see 3.4.2).

²³⁸ **52002R**, l. 13.

²³⁹ For the amount of copper and two chisels see 2.6 below.

²⁴⁰ **52002R**, l. 14. The name does not occur in Ranke.

²⁴¹ Cf. Janssen (1975a), 168.

estate of Hori in **52002R** (58 *khar* (*ḥꜣr*) and three *oipe* (*ipt*), or 4478.26 litres, of emmer)²⁴² may offer a rough estimate of the size of the tomb building crew. As the grain was probably meant as a monthly payment for the shared crew of workers, the amount may be compared to the wage lists from the Deir el-Medina material. From this comparison, the approximate number of workmen can be calculated.

In his *Commodity prices*, Janssen argues that four *khar* of emmer for bread and 1½ *khar* of barley for beer per month were sufficient for supporting up to 10 family members of an ordinary worker in Deir el-Medina.²⁴³ One can compare this to the lower rations attested for younger unmarried men (*mnḥw*),²⁴⁴ 1½ *khar* of emmer and ½ *khar* of barley, which would still be well above a subsistence level.²⁴⁵

Using the figure of 1½ *khar* per person means that 39 men could be paid for one month with the 58.75 *khar* mentioned in **52002R**. However, this would require that the recorded amount of emmer did not include any rations of barley and that all the workmen working for Buqentuf and Ta-Renenut at Saqqara were young unmarried men. Assuming that the wage level of the Saqqara crew was equal to the Deir el-Medina workmen would mean that wages could be paid to approximately 15 men. However, it seems reasonable to assume a lower monthly ration for the Saqqara workers in general than the men building the tomb of the king in Thebes. Half the amount, i.e. two *khar*, would still mean sustenance for a family of approximately five individuals.

Factoring in and allowing for a foreman or specialists, e.g. skilled stoneworkers and painters, gives a less neat but also more realistic picture of the composition of the workers. Many hypothetical arrangements of various quantities of rations can be suggested, but without specific archaeological or textual evidence, the size of the crew building the tomb of Mai, and possibly the tomb of Hori the vizier as well, remains unclear. That being said, an estimate of 23-28 workers under the authority of Buqentuf does not seem unrealistic when, for example, compared to the numbers of workmen described in the Senenmut ostraca (see chapter 3).

2.4 - Geographical locations

The travel distances between various geographical locations would have had an impact on the logistics and planning of any building project in ancient Egypt. As the administrator in charge of the tomb building

²⁴² One *khar* was in the New Kingdom the equivalent of 76.88 litres and an *oipe* was ¼ of a *khar*, or 19.22 litres. Cf. Janssen (1975a), 109. Compare to J. Černý (1954), "Prices and Wages in Egypt in the Ramesside Period", 914, where a slightly lower value is assigned: 76.56 litres and 19.14 for the *khar* and *oipe*, respectively.

²⁴³ Janssen (1975a), 463.

²⁴⁴ Eyre (1987b), 201.

²⁴⁵ Janssen (1975a), 463.

project, Buqentuf would presumably have been keenly aware of his options and limitations for obtaining the necessary supplies he needed and how to arrange for the transport of the supplies to the tomb site.

There are six different geographical locations mentioned in the dossier. Four of them are places that Buqentuf visited himself and two are mentioned as current locations for the king. The first entry for the whereabouts of the ruler is Piramesse,²⁴⁶ which lies c. 115-120 km in a straight line from Saqqara where Buqentuf presumably wrote the text. The reason for the entry may have to do with scribal training and habits, a mnemonic device, a demonstration of knowledge and writing, or all of the above, but the information must have come from somewhere. Buqentuf could have travelled directly from Piramesse before arriving at Saqqara and assumed the king would still be there. The journey upstream, presumably by boat, would have taken approximately two to three days to complete.²⁴⁷ He could also have received news from others, possibly a messenger carrying letters from or to the king.²⁴⁸ A similar source was probably utilised when Buqentuf noted a different location for the king, namely that of Heliopolis,²⁴⁹ which is about 30 km from Saqqara, approximately a day by boat.²⁵⁰ As Buqentuf has at least one draft letter intended for the king²⁵¹ he would presumably wish to know the location of the recipient. On the other hand, this information was most likely readily accessible in the larger towns and cities that any messenger could be expected to pass through, removing the need for Buqentuf to keep a running record.

Within the dossier, Buqentuf visits four distinct geographical locations. The most prominent location and focal point of the papyri is the necropolis Saqqara,²⁵² or as it is described in the texts, the West of Memphis. The second location is the city of Memphis,²⁵³ modern Mit Rahina, which lies c. 4 km east of Saqqara. This is the first place Buqentuf visits in **52002R** when he hands over a document to some unspecified officials. As he specifies that he “spent the night in this place” (*sḏr m st tn*), it was presumably already too late in the day for him to proceed to Saqqara after having dealt with the officials. The reason for the notation is similar to the recording of the location of the king and possibly served as a reminder or explanation of the progression of the tomb building project. On the other hand, Buqentuf starts the next entry with a new date and then specifies that he ascended to the West of Memphis, effectively rendering the previous entry superfluous.

²⁴⁶ **52002R**, l. 3; **52002V**, l. 1; **52003R**, l. 1.

²⁴⁷ For travel times by boat see R. Kraus (1984), “Reisegeschwindigkeit”, 222. In *Lexicon der Ägyptologie, Band V*, 222-223.

²⁴⁸ For a discussion on the travels of the king and the considerations for keeping track of his movements see Hagen (2016), *op. cit.*

²⁴⁹ **MMAV-RA1**, l. 3

²⁵⁰ Kraus (1984), *op. cit.*

²⁵¹ **52003V**, l. 4-7(8).

²⁵² **52002R**, l. 4+5+8.

²⁵³ **52002R**, l. 5+7+16.

Two days later, after the encounter with Ta-Renenut, Buqentuf sets out presumably from the West of Memphis for the third location, the town of Pakakem,²⁵⁴ the location of which is unknown. However, the town presumably included the estates of both the vizier Hori and the general Mai within its wider periphery. Based on the entry in line 10, where Buqentuf states that he has reached the town in the evening and is spending the night in this place on the same day he set out from Saqqara, it must have been relatively close to the necropolis. The journey was made on the Nile in a boat meant to carry the rations and equipment. The procurement of the boat evidently happened at Memphis because it is later specified that this is where it was handed back to its owners. Before doing so, Buqentuf notes that the 3.3 tons²⁵⁵ of grain rations were carried to a magazine for storage.²⁵⁶

The fourth location that Buqentuf visits is the port of Pekhemet,²⁵⁷ which is not known from other sources. In **52002R**, it functions as a waystation for Buqentuf returning with materials from Pakakem to Memphis and Saqqara. This suggests that Pakakem was most likely situated north of Memphis, i.e. downstream, and that the return journey required additional travel time going against the current of the Nile. This notwithstanding, there is also mention of the bag or sack (*tnf.t*) of Buqentuf which probably contained his scribal equipment, that was apparently returned to him in the port of Pekhemet, but which is not further elaborated on or indeed referred to again.

Finally, the possible mention of a mortuary temple of Ramesses III on the Western river should be included in this section.²⁵⁸ As already mentioned above, the Western river possibly refers to the Canopic arm of the Nile, i.e. downstream from Memphis and Saqqara.²⁵⁹ Due to the fragmented nature of the passage in **MMAV-RA1**, a more precise approximation of where on this river branch the temple once stood is not possible. It does however seem reasonable to assume that it was beyond both Pekhemet and Pakakem and thus requiring a longer journey if Buqentuf indeed had responsibilities to perform in connection to the temple.

²⁵⁴ **52002R**, l. 9+10. Cf. Hannig (2006), 1195.

²⁵⁵ Emmer wheat has a density of approximately 750 kg/m³. Also, compare this relatively small cargo to the amount of grain transported on the 18 ships mentioned in P. Amiens and P. Baldwin, which carried between 300 and 1000 *khar* each. J. Janssen (2004), *Grain Transport in the Ramesside Period*, 28.

²⁵⁶ **52002R**, l. 17.

²⁵⁷ **52002R**, l. 15.

²⁵⁸ **MMAV-RA1**, l. 6. For a discussion on the term 'mortuary temple', see G. Haeny (1998), "New Kingdom 'Mortuary Temples' and 'Mansions of Millions of Years'", 86-126.

²⁵⁹ For the Bahr Libeini as an alternative interpretation see 2.5 below.

2.5 - Logistics

An important logistical concern for Buqentuf would have been the access to workers to do the building work. However, there is no mention of the source or locality from where the men came, which suggests that they were local.²⁶⁰ One interpretation of the fragmentary **MMAV-RA1** suggests that some of the workers were from the military. This notwithstanding, the use of manual labour created the need for supplies and rations/salaries to be brought to the worksite.

It is worth noting that it is Buqentuf who himself in **52002R** leaves Saqqara in order to procure equipment, materials, and rations for the workers. It is not possible to determine whether he did so regularly while the tomb project progressed or if he delegated the task to others. The supplies would have been needed at regular intervals and the best way to ensure this was perhaps for Buqentuf to personally make sure that everything was delivered. This would have meant regular journeys over the course of the seven months recorded, most likely to the estate of Mai but possibly to other locations as well. An earlier parallel for this pattern of travel is found in the papyri from the Red Sea, the Wadi el-Jarf Papyri.²⁶¹ These contain a logbook of the regular journeys of an inspector (*šḥḏ*) called Merer who supplied the pyramid of Khufu with Tura limestone approximately 1400 years before the time of Mai and Buqentuf. He and his team of about 40 men journeyed (*nṣṣ*) to and from the harbour areas of Giza two or three times every 10 days, delivering approximately 30 blocks every time.²⁶² Merer and his men were supplied by an “Overseer of Six” (*imy-r 6*) named Idjeru, who journeyed to Heliopolis on the first day of the month and returned on the fourth day with 40 *khar* and a large *heqat* -measure of *beset*-bread (*bst*).²⁶³ This amount would have fed approximately 40 persons for a month.²⁶⁴

Buqentuf could have had a similar arrangement with a ship’s captain or inspector similar to Merer, who would be in charge of securing the supplies after the initial journey described in **52002R**,²⁶⁵ where Buqentuf was probably required in person. A tentative suggestion for such a captain, although not directly evidenced, could be the owner of the boat from which Ptahmose stole a document mentioned in line 7 of **52003R**; Ipa, who is not mentioned again. The boat that he owned is called a *dpt*, a generic term for water

²⁶⁰ This is perhaps similar to the workers in the Senenmut ostraca who are not described as coming from a specific geographical location unlike some of the labourers in the Deir el-Bahri ostraca. See 3.5.2 below.

²⁶¹ See in general, Tallet (2017), *Les Papyrus de la Mer Rouge I*.

²⁶² Tallet (2017), *op. cit*, 91.

²⁶³ Cf. Tallet (2017), *op. cit*, 53-60.

²⁶⁴ Tallet (2017), *op. cit*, 58-59.

²⁶⁵ A possible parallel to such an arrangement is indirectly found in the 18th Dynasty P. Brooklyn 35.1453, which is a ship’s log of deliveries at several docks along the Nile. The ship and its presumed crew and captain, neither of which are named, visited no less than four different docking sites in one day (fragment A, V/H) and seems to have been almost constantly underway, crisscrossing the same local part of river. As such they would have operated similarly to Merer in the Old Kingdom. Cf. V. Condon (1984), “Two Account Papyri of the Late Eighteenth Dynasty (Brooklyn 35.1453 A and B)”, 57-74, pls. 5-6.

craft known since the Old Kingdom,²⁶⁶ and as such does not offer much information in terms of size, capacity, or crew size. Buqentuf also recorded having used a *dpt*-boat for his journey in **52002R**.²⁶⁷ Regardless of whether or not these two boats were one and the same, the fact that Buqentuf was able to transport 3.3 tons of grain, equipment, a donkey as well as a number of his men on one does give us an indication of the size of the *dpt*-type boat in the later part of the New Kingdom. Further elucidating the versatility of the boat type, **MMAV-VB** mentions the craft having been used for the transportation of bricks, in this instance possibly 200 bricks.²⁶⁸

That Buqentuf was not ignorant of boat and ship-types is illustrated in **MMAV-RB** where he refers to a different type of craft, the *ḳꜣy*.²⁶⁹ This type has been identified as a fishing boat and as a transport boat.²⁷⁰ The latter seems in the current context more likely as the craft was loaded with equipment (*sdbḥ.w*),²⁷¹ 140 hetep-baskets (*ḥtp.w*)²⁷² of reeds, and foodstuff. Thus, in addition to knowing that Buqentuf and his workers were supplied with rations and building materials, we also see that these were transported by boats. If the presumption that the tomb of Mai was located somewhere on the plateau of Saqqara holds true, all supplies would first have been unloaded from the vessel and then carried up to the building site. This last stretch of transportation was presumably done by the young male donkey mentioned in **52002R** and the workers themselves or the crews of the boat(s). As described above in the discussion of the type D entries and mentioned in **52002R**, the rations of foodstuff would arguably be transported to a storehouse awaiting distribution to the workers, which may have happened at the storehouse itself. The building materials, however, would need to be transported to the tomb.

Depending on the distance from the harbour area, this would have required multiple trips by relatively few workers or fewer trips by many workers. While it presently is not possible to determine where exactly the mooring place for the boats near the Saqqara tomb necropolis was during the reign of Ramesses III, it is worth noting that the Nile, and possibly one or more canals on which sailing with relatively large vessels were possible, was situated much closer to the escarpment of the necropolis.²⁷³ The work of Judith Bunbury and David Jeffreys in the Memphite floodplain shows that a western branch of the Nile existed in the Old and Middle Kingdoms which split off from the eastern branch not north but south of the city of Memphis.²⁷⁴

²⁶⁶ Cf. Tallet (2017), 87; Hannig (2006), 1049 : “Schiff, Barke”.

²⁶⁷ Lines 9 and 17.

²⁶⁸ Line 8.

²⁶⁹ Line 4.

²⁷⁰ Erman & Grapow (1971), I, 234: “art Transportschiff”. Lesko (1982), 93: “transport boat”. Hannig (2006), 176: “Fischerboot, Transportboot”.

²⁷¹ Hannig (2006), 855.

²⁷² Hannig (2006), 613.

²⁷³ Tallet (2017), 84-85; Sullivan, E. & Harrower, E. (2015), “The future of spatial technologies in Egyptology”, 458, fig. 6.

²⁷⁴ J. Bunbury & D. Jeffreys (2011), “Real and Literary Landscapes in Ancient Egypt”, 66-69.

This western branch was during the New Kingdom probably much more silted up during the New Kingdom, due to the gradual tilting of the Nile Delta towards the north east,²⁷⁵ possibly becoming the modern canal of Bahr Libeini. This means that there probably also existed docks for shipping on the western side of Memphis as well as on eastern side, and this would have been utilised by the workers especially when transporting the larger stone blocks.

2.6 - Tools and equipment

It is worth noting that Buqentuf acquired relatively few items of equipment on his journey in **52002R**, or at least mentioned in his report. Preparing for a construction project of a tomb similar in design to the temple tombs of the 18th and 19th Dynasties in the Saqqara necropolis would require not only building materials, but also many different tools and relatively specialised equipment. This includes items such as cubit rods, measuring cords, builders' squares, plum bobs and plummet lines, as well as square levels, mallets, chisels, adzes, stone pounders, scrapers and hoes for excavation and clearing, baskets, tow cables (heavy duty ropes), wooden levers and sledges for moving and transporting stone blocks, as well as ceramic vessels for transportation of water and plaster. That only a few of these items are mentioned in the papyrus suggests that the remainder would have been already present at the building site.²⁷⁶ Furthermore, the items that Buqentuf did acquire, e.g. rope and copper for chisels, are things that would wear out relatively quickly and need constant replacing.

That Buqentuf did not need to acquire large amounts of equipment strengthens the argument that he and Ta-Renenut were probably making use of the same workers and their tools for both the tomb of the vizier and the tomb of general Mai.²⁷⁷ Nevertheless, the workers would need supplies and new equipment when old items wore out. This potentially relates to the value of the items that were acquired for them, which at the same time reveals the funds that Buqentuf had access to and utilised. Whether these were physical funds in terms of metal *deben* or credit he could draw upon is less important here, as the value of any given item remained the same.

In line 13 of **52002R** Buqentuf records the acquisition of an amount of copper valued at 12 *deben* for two chisels specifically meant for, or perhaps on behalf of, a stonemason named Ramose (*ḥmt n ḥnr 2 ḥr.n dbn 12 n ḥrti rꜥ-ms*). The copper is the only commodity recorded within the dossier that has a value in *deben*

²⁷⁵ Bunbury & Jeffreys (2011), 66.

²⁷⁶ An alternative interpretation is that the acquisition of these items was not recorded or that it was recorded elsewhere.

²⁷⁷ Because the tomb project had already started ahead of Buqentuf's arrival, equipment could arguably have been acquired and brought to the site by e.g. the workmen.

assigned to it. It has been calculated from other textual sources that one *khar* of grain was roughly equal to two copper *deben*,²⁷⁸ but that barley was generally more expensive than emmer,²⁷⁹ ranging from one to two copper *deben* per *khar*.²⁸⁰ The 58.75 *khar* of emmer in line 11 of **52002R** would thus have been approximately worth 88.1 copper *deben*. Similarly, and following the price list of O. Ashmolean 183, the length of 160 cubits of *nwh*-rope in line 12 of **52002R** would have been worth 96 *deben*.²⁸¹ Assuming a similar price per cubit as the *nwh*-rope, each of the two good quality cords (*nw.t mtrw*)²⁸² 25 cubits long each, in line 14 of **52002R**, would be equivalent of 30 *deben*.

Buqentuf would thus on his initial journey have acquired items and rations for the tomb project for the value of approximately 220-230 *deben*. To this should be added the price of the young male donkey in line 14 of **52002R**, acquired from the scribe Khamdjedu, which would presumably have had a value of 20-30 *deben*.²⁸³ Nevertheless, this does not mean that Buqentuf carried a moneybag with copper or silver *deben*, it simply serves to demonstrate the access to funds that he would have had. As mentioned above, a credit system possibly involving the estate of Mai may have been in place or the items, apart from the donkey, may have been produced within the estate, rendering payment unnecessary but certainly requiring a record of the acquisition. The same may have been the case with building materials such as the 551 unspecified units (possibly the *menet*-jars – see 3.4.2.2 below) of plaster mentioned in line 3 of **MMAV-RB**.

The building of the tomb would have required items and resources far beyond what is recorded in the dossier, and the lack of further acquisition entries in the dossier suggests that the majority was available at the construction site. One could reasonably surmise that the expense account of the tomb owner would only be affected when items needed replacing or when the workers had to be paid.

2.7 - Work process

As demonstrated in figure 5 above, a large part of the preserved dossier is dedicated to the recording of the procurement of supplies and materials (type D - 20%) and to letter drafts (type F - 20%). The description of actual construction activities on the tomb constitutes only 24% of the lines of the papyri. This distribution of course does not imply that Buqentuf only spent a quarter of his time overseeing the building project, but

²⁷⁸ Černý (1954), 915-916; Eyre (1987b), 201.

²⁷⁹ This was also the case during the Middle Kingdom where the ratio between barley and emmer was 2:3 as described in the Heqanakht letters. Cf. J. Allen (2002), *The Heqanakht Papyri*, III,8 (pl. 12 and 143).

²⁸⁰ Janssen (1975a), 112-132.

²⁸¹ Janssen (1975a), 438-440.

²⁸² Cf. O. 95 in Hayes (1942), 24, pl. XIX.

²⁸³ Janssen (1975a), 168.

it shows which parts of the project was needed or expected to be recorded in writing. It also gives an indication of the necessary steps and stages required to keep a building project running.

In this section, I will attempt to synthesize the various steps taken in the stages of planning, preparation, and construction of the tomb of Mai over the seven months that the building project ran as described in the Saqqara Dossier. I argue that the dossier is Buqentuf's personal work notes,²⁸⁴ not only for the tomb project but also for his business with the royal court and the estate of Mai. What this business entailed has not been preserved in more detail, but it seems very likely to have overlapped with the tomb project and that Buqentuf wrote the various entries on the three papyri because they all were related.²⁸⁵ The challenge is then to interpret each piece of information in a tomb construction context.

The chronological sequence described within the dossier provides a framework for studying the process of tomb construction. All the information required to gain a full picture of the process is preserved in the texts, although each piece has to be approached differently, both through interpretation of the details and by examining the dossier as a whole. In the following, I present my interpretation of the dossier and the stages of the tomb building project that are described as well as any hypothetical additional steps that would have been required.²⁸⁶ These stages are: Commission and planning; Preparation; Acquiring supplies; Demarcation and clearing; Initial construction; Resupplying; and Main construction.

2.7.1 – Commission, planning and preparation

There are a number of details within the dossier that give us clues regarding the planning and commission of the tomb of Mai. The continued recording of the location of the king suggests not only that Buqentuf had a trained habit of doing so but also that this was important information for the project, i.e. that the project was executed with royal favour if not direct involvement. As a general, Mai would presumably already have some form of interaction with the king and it is not impossible that the tomb was part of a reward or privilege bestowed upon Mai,²⁸⁷ or perhaps a result of such rewards.²⁸⁸ This interpretation is speculative,²⁸⁹

²⁸⁴ For the range and use of ancient Egyptian documents see Eyre (2013), 8.

²⁸⁵ P. Cairo 52004 may in the future prove or disprove this claim.

²⁸⁶ Compare for example with the four suggested building phases in the tomb of Meryneith from the 18th Dynasty. See Raven & Van Walsem (2014), 60-76.

²⁸⁷ For such interactions with the king in the New Kingdom see S. Binder (2008), *The Gold of Honour in New Kingdom Egypt*, 258-263, especially figure 18.1.

²⁸⁸ Both Ahmose son of Ebana (Urk. IV, 1-11) and Neshi (A. Gardiner (1905), *Inscription of Mes*, 42, N4 - I. 7-11) received plots of land as rewards for military service, and Ahmose seems to have spent a portion of his reward which also included gold and prisoners of war on his tomb (no. 5) in Elkab. C. Eyre (1994), "Feudal Tenure and Absentee Landlords", 114-115. On Neshi see G. A. Gaballa (1977), *Memphite tomb-chapel of Mose*, 28, and S. Allam (1989), "Some Remarks on the Trial of Mose". 104.

but the campaigns against the Sea Peoples took place only seven years prior to the events described in the dossier, and it is not inconceivable that Mai and his troops would have been stationed on the eastern or western border of Egypt as deterrent against further invasion attempts. The king would want to keep his commanders content and satisfied, and the promise of a tomb in a popular necropolis would arguably be desired by the soldiers.

That Buqentuf included in the dossier the handing over of a document to officials upon arrival at Memphis suggests that this document was important to the tomb building project. This means that someone, possibly the king or any number of subordinates including general Mai, gave the document to Buqentuf before he travelled to Memphis. The current interpretation is that the document was a royal decree or similar for the local officials giving Buqentuf the authority to oversee and supply the construction of the tomb of Mai.²⁹⁰

Part of the preparation for the project was a visual inspection of the site by the person in charge. However, it seems Buqentuf expected to find the workmen already working on the tomb upon inspecting the tomb site in line 6 of **52002R**. This suggests that arrangements had been made for the work to begin before Buqentuf arrived at the necropolis, which could explain the document in line 5 having been handed back to the officials. This document could hypothetically have included details of the desired design and layout of the tomb,²⁹¹ perhaps along the lines of the simple sketch drawings found near the tomb of Senenmut (TT 71)²⁹² or the detailed plan of the tomb of Ramesses IX on O. CG 25184.²⁹³ The delivery and use of stone blocks and bricks in the building process would indicate that the tomb of Mai was of the temple type such as those from the 18th Dynasty south of the causeway of Unas rather than a rock-cut tomb similar the examples on the Saqqara escarpment.²⁹⁴

When the chantress of Thoth, Ta-Renenut, visits the necropolis, it is specifically stated that she is there to inspect their building site (*ptr p3y=w r-^c-b3kw*), most likely referring to Ta-Renenut and the vizier. Seeing the state of the site, Ta-Renenut offers advice, or perhaps a warning, to Buqentuf: “Do not approach it until you have finished for yourselves a complete building site” (*m ir(i).w hn r=f i.mh.tw n=k w^c r-^c-b3k.w nfr*). What she is saying is: “do not encroach upon it (our building site) before you have confirmed (i.e. measured) your

²⁸⁹ There seems, however, to have been an established practice of rewarding officials with tombs to a degree that it is even mentioned in the Middle Kingdom composition, *The Story of Sinuhe*. The specific passage is found on P. Berlin 3022, l. 300-310. See, for example, J. P. Allen (2015), *Middle Egyptian Literature*, 150-152.

²⁹⁰ For discussions on written authority see: W. C. Hayes (1955), *A papyrus of the Late Middle Kingdom in the Brooklyn Museum*, 35-36; Eyre (2013), 86-89. See also 2.2.3 above.

²⁹¹ For an overview of known architectural plans from ancient Egypt see Arnold (1991), 7-10, table 1.1.

²⁹² O. 31 and O. 32 – See Hayes (1942), *Ostraka and name stones*, pl. VII.

²⁹³ Černý (1973b), *The Valley of the Kings*, 23.

²⁹⁴ For example, the tombs of Maia (Bub. I.20) (A. Zivie (2009), *La Tombe de Maia*) or Thutmose (Bub. I.19) (A. Zivie (2013), *La Tombe de Thoutmes*).

own area for building". The acquisition of the 160 cubits long *nwh*-rope that Buqentuf later in **52002R** recorded was possibly connected to the advice of Ta-Renenut because the rope is specifically said to be for the demarcation of the field (*nwh n.t mh 160 r dr t3 sh*). As such, the rope would be able to enclose a maximum area of 1600 square cubits (or 441 m²), which would indicate a fairly large tomb. For comparison, the outer limits of the superstructure of the 18th Dynasty tomb of Maya and Meryt covers an approximate area of 587.6 m²,²⁹⁵ and that of Tia and Tia from the 19th Dynasty an approximate 343.5 m² including the pyramid to the west and the portico to the east.²⁹⁶

There seems to have been an unrecorded agreement between Ta-Renenut and Buqentuf, as he left the day after in search of supplies and equipment. When he returned with the grain-rations meant for the workers Ta-Renenut was in charge of, the grain was carried to a storeroom (*mhr*). The location of this storeroom was presumably known to both Ta-Renenut and Buqentuf, and may have functioned as a necropolis storehouse on a similar principle as the *htm* of Deir el-Medina.²⁹⁷ The first three days of the tomb building project as recorded concerned the initial preparation stage, but several more days should be factored into the overall planning stage. This, however, depends greatly on where the project was commissioned, whether Buqentuf had already been at Saqqara to initiate construction, and the travel times between the geographical locations that he visited before returning to Memphis.

2.7.2 - Acquiring supplies

This stage arguably falls under that of preparation, but as the dossier mentions activities which can be labelled as re-supplying, the initial supply journey of Buqentuf should also be discussed. The details of the items procured on the journey are treated in the sections above, in particular 2.2.4, 2.4, 2.5, and 2.6. In short, the journey lasted four full days from day nine to day 12 of the fourth month of Peret, and would have involved the initial procurement, possibly rental, of a boat by which to travel and transport the supplies. On the fifth day, the boat was unloaded before the boat itself was returned to its owners.

The place of departure and eventual arrival was arguably a harbour area on a canal to the west of Memphis, close to the necropolis. This canal was the silted up remains of a western Nile branch that existed

²⁹⁵ Cf. Martin *et al* (1988), 2.

²⁹⁶ G. T. Martin, (1997), *The tomb of Tia and Tia, a royal monument of the Ramesside period in the Memphite Necropolis*, 4, pl. I.

²⁹⁷ The *htm n p3 hr* has yet to be identified archaeologically but has been interpreted as a check point for people entering Deir el-Medina, as a storehouse for commodities, and as an office for the village scribes and the Medjay leaders. See for example the descriptions by: Ventura (1986), *Living in a City of the Dead*, 83-106; A. G. McDowell (1990), *Jurisdiction in the Workmen's Community of Deir el-Medina*, 93-105; G. Burkard (2006), "Das *htm n p3 hr* von Deir el-Medine. Seine Funktion und die Frage seiner Lokalisierung"; and A. J. Koh (2006), "Locating the *htm n p3 hr* of the Workmen's Village at Deir el-Medina".

in the Old and Middle Kingdoms, which probably became the modern canal of Bahr Libeini.²⁹⁸ The boat that was used for transport was of the *dpt*-type, which evidently had the cargo capacity for all the supplies mentioned within the text as well as several people, including Buqentuf.²⁹⁹

Having spent all of day nine travelling, Buqentuf arrived at the town of Pakakemet at sunset. The next day, he visited the estate of the vizier Hori in order to procure the rations for the workmen of Ta-Renenut and the vizier. It was also here that Buqentuf received the long *nwh*-rope for demarcation of the field, indicating further corporation between the two tomb building projects. The same day, Buqentuf was able to visit the estate of general Mai. This shows that the two households of the vizier and the general were located close to each other, possibly mirroring the placement of their respective tombs in Saqqara.

The journey back on day 11 and 12 stretched over two full days presumably because the boat was travelling south against the current, resulting in an overnight stay at the town of Pekhemet. Arriving back at Memphis in the evening, Buqentuf spent the night there before overseeing the removal of supplies from the boat on day 13. After handing the boat back to its owners, who may or may not have been present on the journey, Buqentuf ascended again to the necropolis with the necessary supplies that was not put into the storeroom

2.7.3 - Demarcation and clearing

As mentioned above, the *nwh*-rope was for the demarcation of the field. Together with the two 25 cubits long ropes, or cords, this was possibly meant for the foundation ritual known as the “stretching of the cord” (*pd-šsr*).³⁰⁰ Here the presumed four corners of the tomb and its orientation would have been established.³⁰¹ However, there is no mention of the activity or of the rope to be found in the remainder of the dossier. It would nevertheless be a necessary step in the construction of the tomb, but whether it was performed during the clearing activities of **52002V** or at a slightly later point in time is not clear. The argument for doing the demarcation first would be that the precise scale of the clearing task could be gauged and thus made more efficient. On the other hand, the reverse can be argued; that by clearing the area the demarcation would become easier. In any case, the 160 cubits (84 m) of the demarcating rope would have

²⁹⁸ Bunbury & Jeffreys (2011), 67.

²⁹⁹ For an overview of representations of cargo ships during the New Kingdom see B. Landström (1970), *Ships of the Pharaohs. 4000 Years of Egyptian Shipbuilding*, 134-139.

³⁰⁰ A. Badawy (1957), "Philological Evidence about Methods of Construction in Ancient Egypt", 54–5; Arnold (1991), 10 and 15-16; Rossi (2010), 148-153.

³⁰¹ If Buqentuf was responsible for the daily running's of Mai's estates the rope(s) could have been for measuring the fields, i.e. the height of the crops as is seen in the tomb of Menna (TT 69 - M. Hartwig (2013), *The Tomb Chapel of Menna*, 24-30) or the tomb of Menkheperreseneb (TT 86 - N. de G. Davies (1933), *The tombs of Menkheperreseneb, Amenmose and another*, (nos. 86, 112, 42, 226), 15, pls. XVII-XVIII). The argument against this for the *nwh*-rope is that Buqentuf acquired it at the House of Hori, not the House of the General, and that it is longer than the usual 100 cubits of the *khet*-rope used in field surveys. Cf. Rossi (2010), 154-156.

been able to encircle a maximum area of 1600 square cubits (441 m²). This is assuming that the rope was not cut and that the area encircled by the full length of the rope described a true square, i.e. 40x40 cubits (21x21 m). Other configurations are of course possible while still utilising the full length of the rope. For example, rectangles of 1500 square cubits (50x30 cubits) or 1200 square cubits (60x20 cubits) still have a circumference of 160 cubits. A preference for layouts of the rough relation from 3:1 to 5:3 can be observed in many of the New Kingdom temple tombs of Saqqara,³⁰² and this may also have been the configuration of the tomb of Mai. Assuming once again that the demarcation of the area of the superstructure utilised the full length of the *nwh*-rope, the outer limits probably had a composition; 60 cubits in length by 20 cubits in width, approximately 330 m².

On the 14th day of the fourth month of Peret, the actual work on the tomb of Mai began. Buqentuf records the clearing of rubble and debris (*hm*) in what was possibly to become the central court of the superstructure. He notes that this is done ahead of the stonecutters, i.e. before they can get to work, possibly beginning to cut the tomb shaft into the bedrock. Buqentuf further notes the result or amount of cleared material, recorded as 12x6x3 cubits, i.e. 216 cubic cubits, but incorrectly added to a total of 21 cubits. The 216 cubic cubits correspond to 31.3 m³, or about 50 tons, assuming the removed material consisted mostly of sand. The day after was described as the second day of clearing, but no result was recorded.

After this last incomplete entry in **52002V** there is a gap of 24 days before Buqentuf started writing **52003R**, which begins with day nine of the first month of Shemu. The first entry here is described as ‘the 15th day of construction by the workmen under the authority of Buqentuf’ (*mḥ hrw 15 m p3 šny in n3 rmt nty r-ht sš bwkntw*). This means that construction work on the tomb was done for only half the days between **52002V** and **52003R**. Buqentuf has prepared an entry for recording the result of that day’s clearing rubble but not the result itself. The same occurs on day 10, which is described as the 16th day of construction, not for clearing but for unspecified ‘work’ (*b3kw*), with another entry for the result of the day, which again was not written.

Following the business with the worker Ptahmose, day 13 is recorded and labelled as the second day of “preparing the ground” (*trr*) of the *nḥb*-road of the canal (?) of the tomb. This was clearly a different task than the clearing task (*hm*) and the days it was performed evidently required to be recorded separately. No daily result was recorded and the next day, day 14, the third day of preparing the ground, only has part of the result preserved: x-number of cubits in length and four cubits and six palms in width. The next entry,

³⁰² See H. M. Hays (2011), “On the Architectural Development of Monumental Tombs South of the Unas Causeway at Saqqara from the Reigns of Akhenaten to Ramses II”, 92-101 figs. 6-13. See also Martin, (1997), 4; Raven & Van Walsem (2014), *op. cit.*, 63.

probably day 18,³⁰³ was described as the sixth day of “preparing the ground” (*trr*) of the *nḥb*-road. In this instance a result was recorded; 12 cubits in length by 5 cubits and 5 palms in width, which erroneously was added as 17 cubits and five palms by Buqentuf. The correct result should have been 68.6 square cubits, or 18.9 m². The next entry, day 19, records a new building activity (see 2.7.4 below), but Buqentuf resumes his notation of the ninth day of “preparing the ground” on day 20, this time in the central room or area (*nḥrw*) of the tomb. This was very likely the central courtyard where the tomb shaft was located.

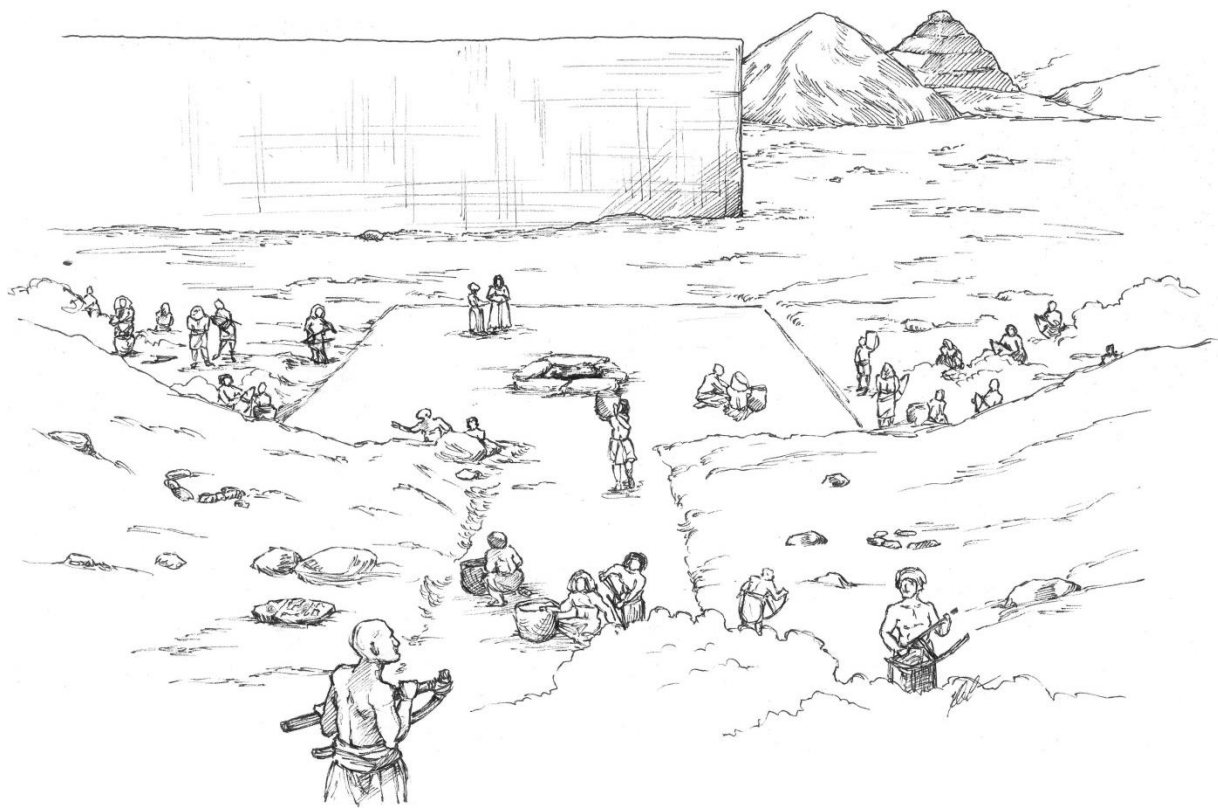


Image 2 - Artist's reconstruction of the commencement of work on the tomb of Mai. Having cleared (*ḥm*) the area for the central courtyard and outlined the tomb shaft the workmen proceeds with the establishment (*trr*) of the access road. Illustration by Ida Christensen.

While partly agreeing with Van Dijk, who proposed the translation of *trr* as “levelling the bedrock with a layer of rubble”,³⁰⁴ I would suggest that the task involved establishing a hard and durable surface. This, in connection with the mention of the *nḥb*-road, would suggest the initial clearing of a path and the hardening of the surface into a roadway, presumably a sort of access road to the tomb building site from one of the supposed transport or procession-roads which must have existed in the necropolis.³⁰⁵ This interpretation fits well with the result of the entry on day 18. The result recorded for day 20 in the central part of the tomb is, however, given not as a measure of area but of volume, equal to about 73 tons of sand. This is

³⁰³ See 2.2.8 above.

³⁰⁴ Van Dijk (1993), 25.

³⁰⁵ For a discussion on the topic, see M. J. Raven (2000), “Twenty-five years of work in the New Kingdom necropolis of Saqqara: Looking for structure”, 140-141.

perhaps best explained as the workers having filled in and hardened the surface with this amount of material, i.e. applying material rather than removing it from the building site. This would have constituted a levelling of the area, and the workers may have utilised the orange-brown layer of sand found throughout the Saqqara plateau beneath the windblown sand for the purpose as seen in the 18th Dynasty tombs.³⁰⁶

2.7.4 - Initial construction

The first entry in which actual building of the tomb project is mentioned is day 19 of the first month of Shemu,³⁰⁷ which is described as the eighth day of building in stone. On that day, eight stone blocks weighing about 1100 kg each had been built into a structure, possibly the outer wall of the superstructure, spanning a distance of seven cubits. As stone blocks of this size were rarely, if ever, utilised in private tombs from the New Kingdom in Saqqara,³⁰⁸ I would suggest that these blocks were cut up into smaller pieces to provide the interior limestone cladding, or revetment,³⁰⁹ in front of the mudbrick walls that formed the core of the superstructure. The stone was presumably also cut in relief with various typical tomb scenes. Before the stone was cut, however, it is not impossible to imagine the stones having formed a temporary retaining wall or similar structure. Alternatively, maybe the stones were not yet used in construction but merely gathered and awaiting the completion of the access road. It seems that an additional 12 similar stone blocks had already arrived which presumably had been dragged across the rough surface sand the previous seven days, less than two blocks on average arriving daily. Perhaps the access road was finished, or close to being finished, on day 19, allowing for better conditions for transporting stone and increasing the delivery rate to eight per day.

2.7.5 - Re-supplying

It is unclear how many days or months passed between the last date of **52003R** and the deliveries recorded in **MMAV-RB**. Seeing that the latter involved a large amount of plaster,³¹⁰ which is unlikely to have been for anything other than the construction of the tomb, it seems appropriate to allow for several months in the interval, possibly just before the events described in **MMAV-VB**. This fragmentary text records the arrival of a supply boat carrying 200 bricks in the early part of the third month of Akhet of year 16, i.e. almost six months later than the beginning of construction in **52003R**. Later in **MMAV-VB**, it seems as if several stone

³⁰⁶ G. T. Martin (1989), *The Memphite Tomb of Horemheb*, 7+16.

³⁰⁷ See also 2.2.9 above.

³⁰⁸ Personal observation.

³⁰⁹ Martin (1989), 17. In particular, see plates 10 and 11.

³¹⁰ For comparison, the tomb of Senenmut (TT 71) required in the vicinity of 100 tons of plaster for the wall surfaces before decoration was applied. See chapter 3.5.1 below.

blocks were delivered.³¹¹ At least one of these blocks measured one cubit in length (52.5 cm) by four cubits in width (210 cm) by one cubit and four palms (82.5 cm) in depth, and would have weighed approximately 2400 kg.³¹² Compare this to the size of the sandstone blocks delivered to the Ramesseum during its construction.³¹³ These are on average 7 cubic cubits in volume (1.019 m³) weighing approximately 2.751 tons,³¹⁴ and therefore similar to the blocks recorded in the dossier. The ships transporting the blocks could have been about the same size as those utilised by Buqentuf at Saqqara.³¹⁵ Assuming that the access road and other transportation roads from the harbour area were sufficiently well constructed, it would require five to seven men to drag this type of stone on a sledge. Finally, **MMAV-VB** mentions the delivery of yet another large quantity of plaster.

2.7.6 - Main construction

The main stage of construction of the tomb of Mai is not as well documented within the dossier as might be expected, and only two passages in **MMAV-VB** seem to refer to this stage; lines 3 to 4 and lines 5 to 6. Again, this is most likely due to the character of the dossier as the personal notebook of Buqentuf, rather than official documents, but there is also the possibility of other notes not having survived.

As mentioned in 2.2.9 above, the fragmentary state of **MMAV-VB** is not easily read or interpreted. The current understanding of lines three and four is that the workmen were cutting stone in the bedrock for the tomb shaft. This is followed by some action involving a sarcophagus, possibly the lowering of it into the tomb shaft or the sarcophagus having been dropped part of the way. In lines five and six it seems as if the workmen were again cutting stone, very likely dressing them down to the desired size. This new size, or perhaps the original rougher size in which the stones were delivered, was recorded as being 0.744 m³, which would weigh approximately 1.6 tons. In line 6 Buqentuf mentions the clearing of stones (*ḥmꜥ inr.w*), which is further specified by a measurement of one cubit and three palms (75 cm). This was possibly the removal of an earlier stone structure which cleared a small area where the new superstructure of the tomb was supposed to be built. It is worth noting that the clearing of stone did not result in a measure of volume

³¹¹ Lines 10-14. The passage is very fragmentary and it is possible that Buqentuf here recorded the cutting or building of these stones. However, both the preceding and the following entries concerns deliveries.

³¹² The volume of 0.91 m³ multiplied by the average density of limestone (2700 kg/m³), which is equal to 2457 kg.

³¹³ K. A. Kitchen (1991), "Building the Ramesseum", 90 (table I).

³¹⁴ Kitchen consistently calculates the metric tonnes for the blocks of stone in his table I wrong, and arrives at lower values of weight than what they should be. For example, , the first entry of a type A block of stone which is 4x1x1 cubits, i.e. 1 cubic cubit, he arrives at a metric tonnage of 1.37. This should be 1.545 tons when using both the 52.3 centimetres for the length of the cubit and the 2.7 grams per cm³ for sandstone that Kitchen utilises.

³¹⁵ Because this was a royal project the number of ships used and the number of blocks delivered was on a much larger scale than the tomb building project of Mai.

but a length, unlike the other clearing tasks using the word *hm* in the dossier, and, indeed, in the 18th Dynasty Theban textual material (see chapter 3 *passim*).

3. The Senenmut case study

This chapter is a case study of the two tombs and the ostraca found in connection with TT 71, the tomb of Senenmut. It begins with a description of the physical placement of the two tombs within the Theban necropolis and a brief overview of their respective architecture. Then follows a description of the local geology and the inherent issues that it caused for tomb construction. Afterwards, the content of the ostraca is analysed and the relative chronology of these documents is outlined. Here, a new and more accurate chronology is suggested, based on the work processes described in the texts, in order to determine not only the overall timeframe of the construction project of TT 71, which has direct impact on the economic expenditure, but also the technicalities of the work processes applied in the excavation and building of the tomb. A section on the construction terminology used in the documents then follows in an attempt to provide a better understanding and translation of each term, as these have a direct influence on our understanding of the construction process.

After discussing the terminology, the chapter then focuses on the organisation and administration of the tomb builders and the institutions and individuals who contributed to the project. An outline of Senenmut's relationship with these institutions and individuals then follows and the final section attempts an overall summary of the building project of TT 71. The documents discussed here give us the unique opportunity to compare the size of the tombs with their socio-economic significance in the early 18th Dynasty and at the same time give us an impression of the construction process.

3.1 The tombs of Senenmut

Senenmut was well-connected to the higher strata of the Egyptian state. He held numerous positions within the upper institutional administration such as 'Overseer of all the Works of the King', 'Chief Steward of the King', 'Overseer of the Treasury of Amun' and 'Overseer of the Granary of Amun'. Titles such as these are, however, difficult to pin down in terms of their exact implications in terms of societal significance,³¹⁶ but Senenmut's titles indicate at any rate that he had access to large amounts of resources, both materials and workforce.³¹⁷

³¹⁶ For example, the difference between titles of rank and titles of office, and the sequential progression and advancement in the career of an individual, is rarely straightforward. Also, the precise areas of responsibility and professional conduct associated with each title often seem ad-hoc from a modern point of view. For further discussion of these issues, see D. Franke (1984), "Probleme der Arbeit mit altägyptischen Titeln des Mittleren Reiches", 103-124; S. Quirke (1986), "The regular titles of the Late Middle Kingdom", 107-130; H. Papazian (2012), *Domain of pharaoh*, 29-30.

³¹⁷ For an overview of these titles see P. Dorman (1988), *The Monuments of Senenmut*, Appendix 3, 203-212.

Unusually for the Theban necropolis, Senenmut opted for a two-part complex where it seems that the intended burial site (TT 353) was separated from the traditional Theban tomb chapel (TT 71),³¹⁸ a model which was used by only a couple of other high officials during the 18th Dynasty after him.³¹⁹ None of these tombs, even when combining the volumetric sizes of the two-part mortuary complexes, approach that of Senenmut's in size, which is perhaps another indication of his privileged standing in Egyptian society.³²⁰

3.1.1 Description of the location of the tombs in the landscape

The two tombs of Senenmut are situated about 500 meters apart in the Theban necropolis (see figure 6). TT 71 is located near the crest at the north-eastern end of the Sheikh Abd el-Qurna hill (see image 3) and overlooks the area of el-Assasif and Deir el-Bahri to the north, as well as the fertile floodplain to the east. TT 353 is located near the modern entrance to the mortuary temple of Hatshepsut and is at its deepest point directly below the first or lower courtyard of this temple.³²¹



Image 3 - View of towards Sheik Abd el-Qurna and TT 71 (marked with arrow on the left) and the location of TT 353 in Deir el-Bahri (arrow on the right). Author's photo (2017).

³¹⁸ See for example Dorman (1988), 109.

³¹⁹ The other two-part tomb complexes of the necropolis belong to the vizier from the reign of Thutmose III, User-Amun (TT 61 and TT 131), and the Overseer of the Treasury from the reign of Amenhotep II, Djehutynefer (TT 80 and TT 104). Because the name and title of the owner of TT 86, the high priest of Amun Menkheperreseneb, also appear in TT 112, he has previously been considered another double tomb owner. However, according to Dorman (1995: 150-154) the two owners of the tombs are uncle and nephew.

³²⁰ The time period and availability of space are factors as well. When construction began on Senenmut's tomb, available space was presumably plentiful as earlier tombs of the Middle Kingdom were concentrated around the temple of Montuhotep II's temple in Deir el-Bahri (see figure 1).

³²¹ P. Dorman (1991), *The tombs of Senenmut*, 21.

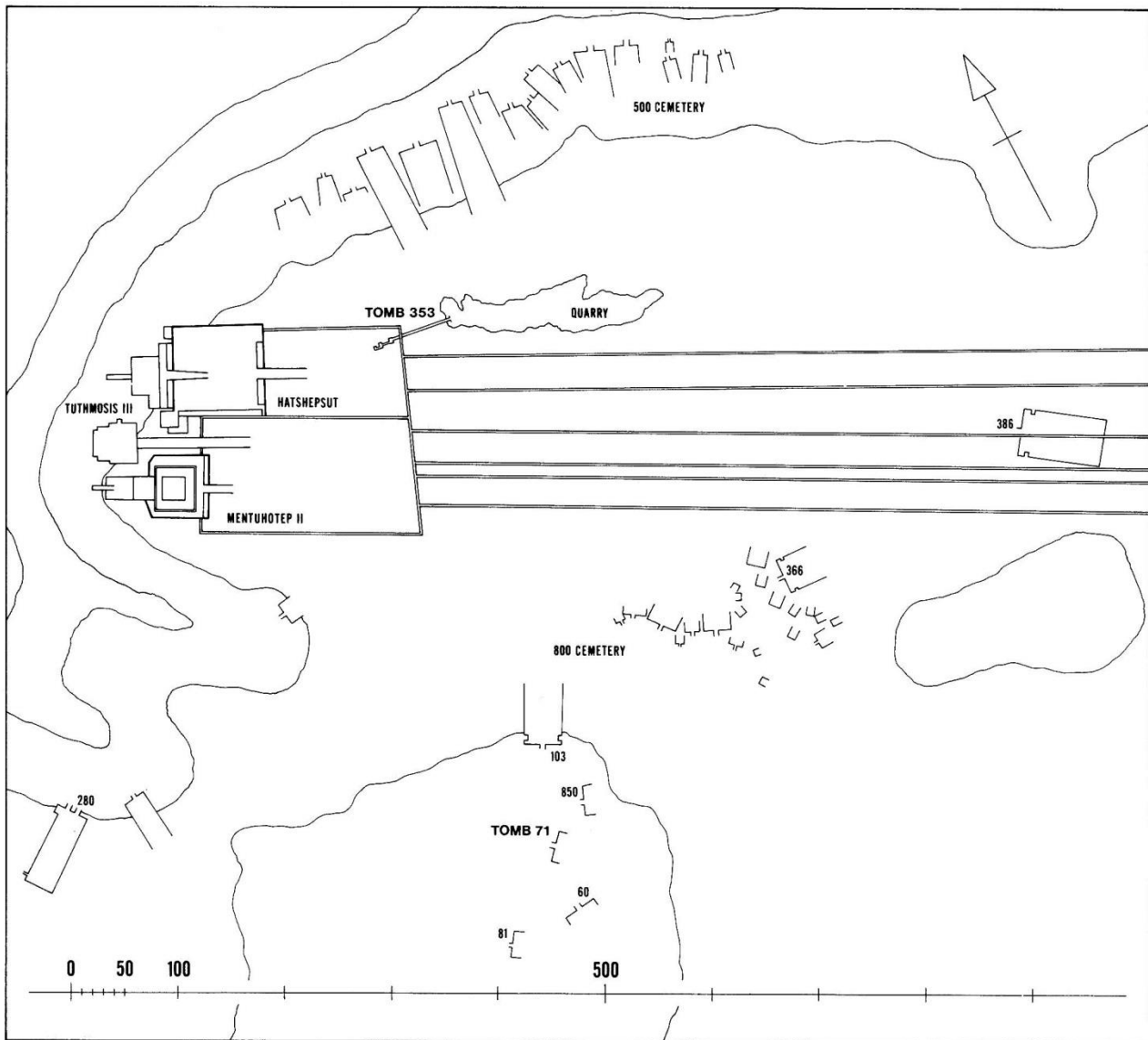


Figure 6 - When construction of Senenmut's tombs began, Sheik Abd el-Qurna was a relatively empty area of the Theban necropolis with only a few previously built Middle Kingdom tombs. Indicated here are TT 60, TT 81, and TT 103, all of which were reused in the New Kingdom. Saff tomb MMA 850 may have been an inspiration for the design of the façade of TT 71, located in the immediate vicinity of the latter. From Dorman (1991), 21, fig.1.

The two tombs most likely represent an attempt to imitate the royal practice of separating the mortuary temple (the place for worshipping the king) from the tomb in the Valley of the Kings.³²² Thus, Senenmut's place of worship or chapel is TT 71 and the burial chamber, TT 353.³²³ The tombs should, according to Dorman, not be considered two individual tombs, but rather one single Theban tomb, incorporating all the necessary components required.³²⁴ It is clear from the elevated position of TT 71 that, although not as large as the Deir el-Bahri temple of Hatshepsut, the tomb when completed would have been a very visual feature in the surrounding landscape. This point to the high social status of Senenmut, who was active during the

³²² S. Snape (2011), *Ancient Egyptian Tombs*, 188.

³²³ Dorman (1991), 163.

³²⁴ Dorman (1988), 109.

reign of the aforementioned ruler. He apparently had his pick of location and chose the most prominent place in the area close to the temple.

TT 353 is not a visible monument, nor was it meant to be. It is located in a pit area used for quarrying blocks of stone for the mortuary temple, a place that largely goes unnoticed by modern visitors. The purpose of the tomb was possibly to provide physical proximity to the ruler³²⁵ and to contain the mummified body of Senenmut. That being said, it is worth noting that the remains of Senenmut sarcophagus (approx. 1230 pieces) were actually found in TT 71.³²⁶ Perhaps it was placed there until either TT 353 or the shafts in the courtyard of TT 71 were completed. Dorman argues that it must have been more difficult to transport the sarcophagus to TT 71 than to TT 353, but that the latter may have been already sealed off and rendered inaccessible by large quantities of limestone chips left in the chambers.³²⁷

3.1.2 Description of the architecture of the tombs

TT 71 was built in the classical Theban T-shape layout that many of the New Kingdom private tombs display.³²⁸ Its layout (see figure 7) consists of a forecourt, entrance door (1.75 m wide and 2.23 m long – the roof collapsed before any reliable measurements of the height could be recorded),³²⁹ a transverse hall (5.65 m wide, 26.14 m long, and 4.56 m high on the southeastern side and 4.38 m on the southwestern side)³³⁰ with 8 columns in a single straight line, an axial hall (2.27 m wide, 17.5 m long, and 4.55 m high at the eastern end and 4.68 m at the western end), and finally a small statue niche, set 2.6 m above the floor level in the western wall of the axial hall (1.68 m wide, 2.2 m long, and 2 m high). Parallels for this small feature can be found in the tombs of Senimen (TT 252) and the vizier Rekhmire (TT 100). There is no longer a defined doorway between the two halls, but the presence of brick jambs suggests that there originally was one built in mudbrick, probably because of the poor quality of stone in the tomb which is not suited for a carved or sculpted doorframe. The lower passages beneath the axial hall are not an original feature of TT 71, but rather a later breakthrough connected to the construction of TT 120.³³¹

³²⁵ Snape (2011), 188. However, P. Dorman argues for the aspect of easy concealment of the tomb being the reason for its location in a quarry. P. Dorman (1995), "Two Tombs and One Owner", 144.

³²⁶ Dorman (1991), 70-76.

³²⁷ Dorman (1988), 108.

³²⁸ Steindorff & Wolf (1936), "Die Thebanische Gräberwelt", *LÄS* 4, 44-47.

³²⁹ Dorman's section drawing on plate 3b shows a height of 3.4 or 3.5 m, but this is clearly an estimate.

³³⁰ The entire northern part of the hall has collapsed and all measurements are from the remaining southern part.

³³¹ Dorman (1991), 29.

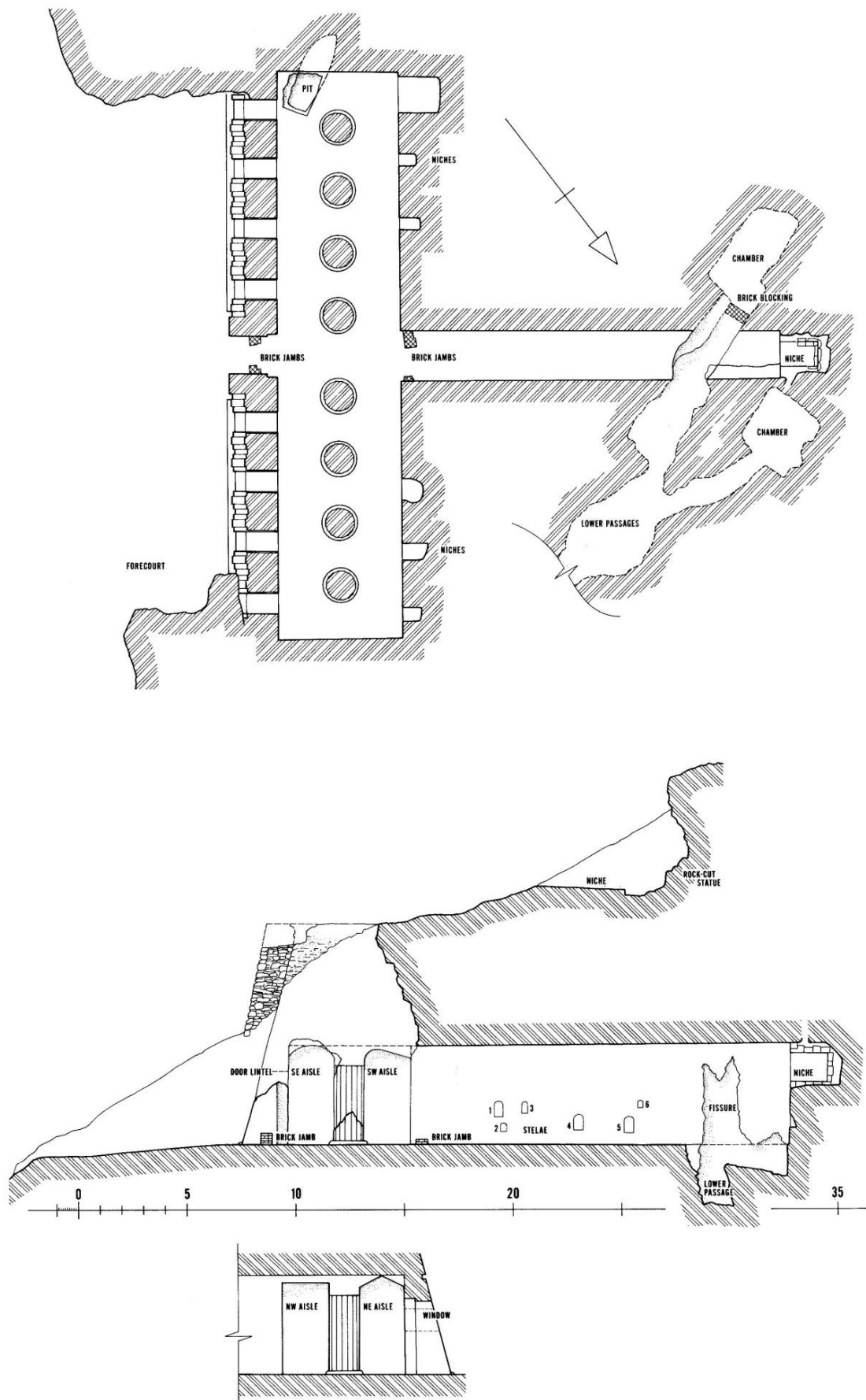


Figure 7 - Plan drawing with sections of TT 71 and scale in meters. From Dorman (1991), plate 3b.

The layout of TT 353 is unusual for tombs in the Theban necropolis as it consists of three relatively small chambers and an even smaller side chamber, connected by three straight and narrow passageways with carved stairs that lead deep into the bedrock beneath the valley floor of Deir el-Bahri. The tomb has a small entrance at the western end of the quarry which leads to a descending passage with carved steps (see figure 8). This passage leads to chamber A (see image 7 below) with the astronomical ceiling.³³² The chamber itself is 10.09 m² in area, roughly square shaped, and in the southern end another descending passage begins, leading to chamber B which is slightly larger than chamber A (14.51 m²). Again, a descending passage in the southern end leads to chamber C (9.05 m²) that has a vaulted ceiling. A pit of 1.5 meters in depth is located in the north-eastern corner of the chamber,³³³ which may have been intended to be the final burial place, but as the pit and tomb itself were left unfinished, this is impossible to ascertain. The distance between the entrance and the west wall of chamber C is 98 meters and the floor of the chamber is located approximately 45 meters vertically beneath the forecourt of Hatshepsut's temple.

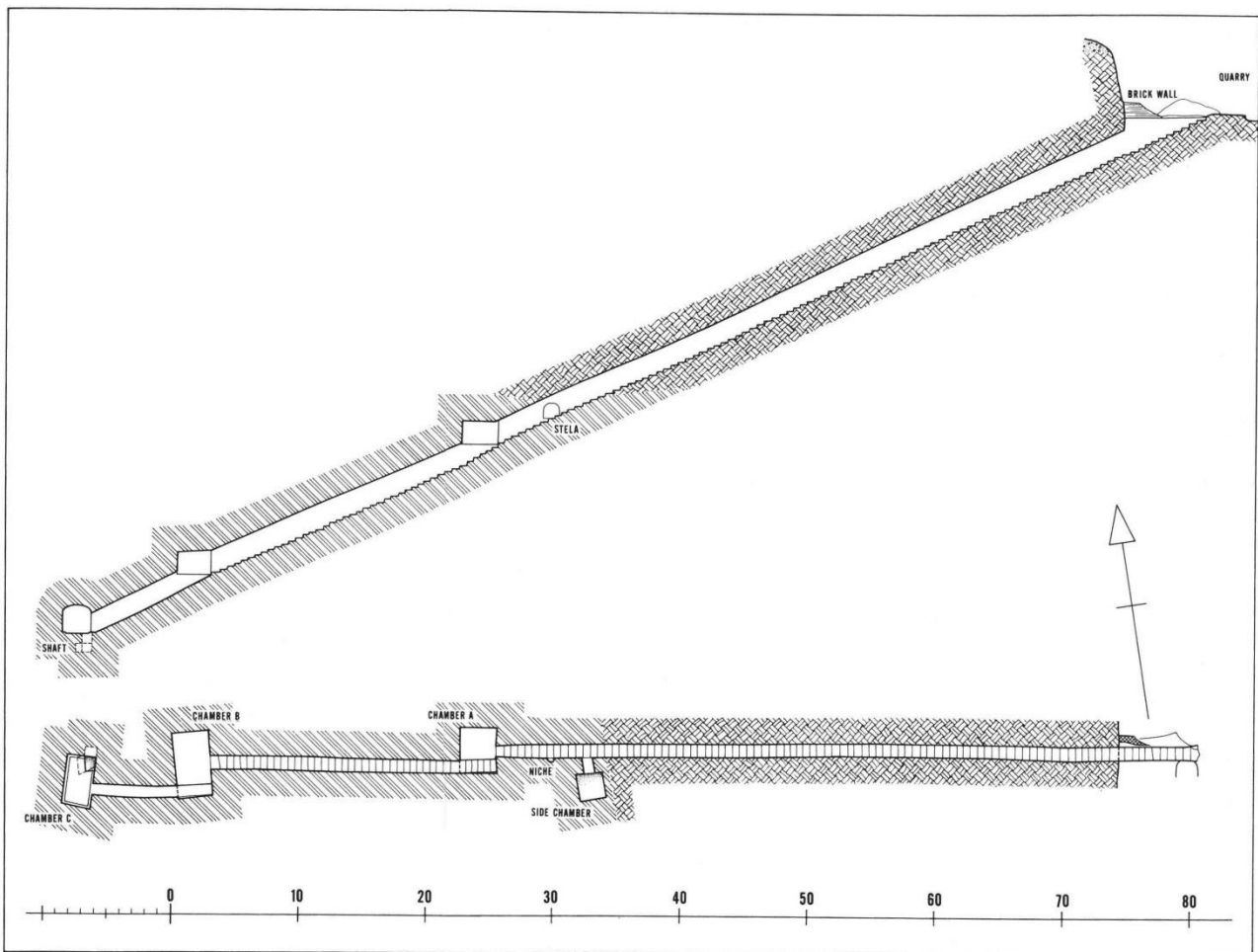


Figure 8 - Section and plan drawing of TT 353 with scale in meters. The length of the first corridor between the entrance and chamber A measures 61.2 meters, the second corridor 24.8 meters, and the third 10.4 meters. Notice the transition between the *tafl* (see 3.1.3 below) and limestone layers in the first corridor. Cf. Dorman (1991), 92-93. From Dorman (1991), plate 51c.

³³² Dorman (1991), 138-146.

³³³ Dorman (1991), 93.

3.1.3 - The geology of the tombs

The geology and quality of the rock have direct implications for the overall layout of the Theban tombs as the builders had to consider what was possible with the geological layers at hand. These factors also have consequences for the possible size of any given tomb, including the two tombs of Senenmut.

Despite having had access to many resources and ample opportunity to select a different location for the tomb, Senenmut chose to have TT 71 excavated in an area where the limestone is of relatively poor quality,³³⁴ which has most prominently resulted in the complete collapse of the ceiling of the transverse hall's north end and part of the south end (see image 4). This is due to the limestone near the top of Sheikh Abd el-Qurna being coarse, friable, and filled with cherty nodules of flint and other types of harder stone.³³⁵ It is also perforated with intrusions of sedimentary gravel that make the limestone even looser. The top of the hill is in general riddled with fractures and fissures that make the stone weak and therefore not particularly suited for sculpted internal structures, an issue that also affects the surrounding tombs. The tombs of Re (TT 72),³³⁶ Amenhotep (TT 73),³³⁷ Anen (TT 120),³³⁸ and Ahmose (TT121)³³⁹ show clear signs of deterioration from erosion, especially TT 120 where the ceiling has collapsed.

³³⁴ Dorman (1988), 87-88.

³³⁵ Piccione, P. A. (2001), *Theban Tombs Publication Project*, 3.

³³⁶ Kampp, F. (1996), 304-305 – Piccione (2001)4-7.

³³⁷ Säve-Söderberg, T. (1957), *Four eighteenth dynasty tombs*, 1.

³³⁸ Kampp, F. (1996), 409.

³³⁹ Piccione (2001), 7-9.



Image 4 - Photo taken during the MMA Excavation of the tomb in 1935-36 showing the collapsed façade of TT 71, the remaining courtyard, and in the lower right corner the entrance to the tomb of Ramose and Hatnofer, Senenmut's parents. From Dorman (1991), plate 1b.

The rock in and around TT 71 is separated into three distinct types that must have made the construction of the tomb challenging. The courtyard is bedrock which is made up of thin limestone layers that are almost vertically orientated; the façade and transverse hall are made up of the same limestone bedrock which here is denser but also more friable with many flint inclusions; and the axial hall is set in a similar dense limestone that alternates often with loose stone and compacted sand.³⁴⁰

³⁴⁰ Dorman (1991), 26.

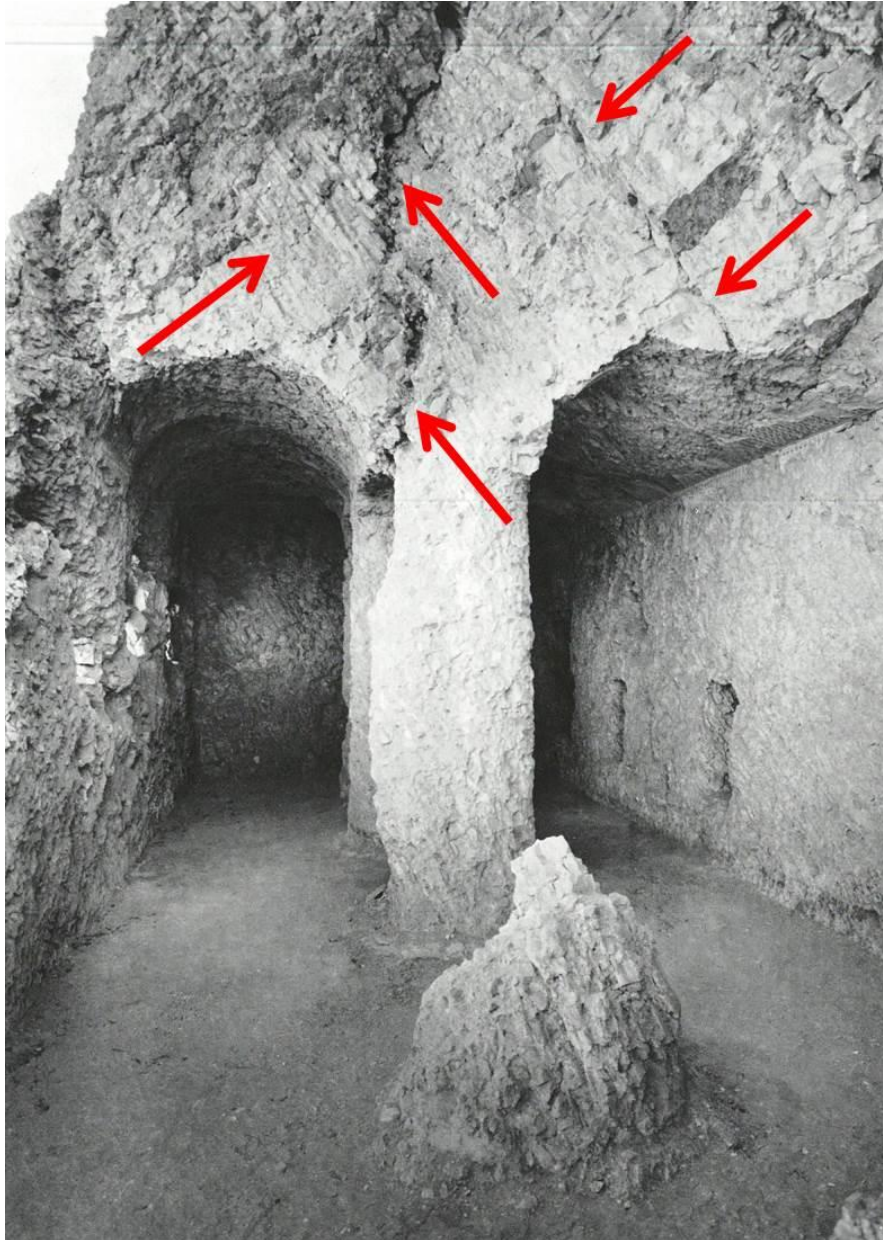


Image 5 - Transverse hall of TT 71 looking south, showing the collapsed northern end of the ceiling. The red arrow farthest to the left indicates the almost vertical stratigraphy of the geological layers. The other arrows indicate two large fissures in the limestone. From Dorman (1991), plate 6a.

The collapse of the ceiling at the northern end of the transverse hall can probably be explained by the vertical stratification of the rock which, when undercut, is eventually unable to support itself (see image 5 - note the stratification lines above the southeastern aisle and the two fissures above the columns and western aisle). Compared to tombs excavated in compact and firm limestone, the relatively loose rock of TT 71 would have been easier to excavate and construction progress in this regard would have been faster. At the same time, however, the same feature may have required a large amount of time securing the walls and ceilings with plaster and fill. This was also done in TT 72 using mud plaster or *muna*, limestone chips and donkey dung.³⁴¹ At certain points, the builders of TT 71 were forced to shore up and reconstruct larger

³⁴¹ Piccione (2001), 6.

parts of the walls using stone blocks laid horizontally with a mortar mix; for example at the junction of the axial hall and the southwest aisle of the transverse hall.³⁴² This procedure seems to have been relatively common and it occurred also in the tomb of Djehuty (TT 11) in Dra Abu el-Naga.³⁴³

In order to construct a smooth wall for decoration the builders first applied a layer of coarse plaster to fill in the gaps of the stone wall (see 3.4.2.3 (3rd) below), and added a layer of finer white plaster.³⁴⁴ In most of the tomb the plaster has detached and fallen down from the walls and ceiling, and very little original decoration is still visible. Image 6 shows the corner between the south wall and the ceiling of the axial hall, where one can see from bottom to top (1) the rough rock wall, (2) the layers of plaster, (3) the outer layer with preserved decoration, and (4) the mortar with inset limestone chips in the ceiling.



Image 6 – South wall and ceiling of the axial hall showing the natural rockface (1), layers of plaster (2), the coloured decoration (3), and plaster inset with limestone chips (4). Photograph by Hanne Siegmeier, 2011.

The chambers of TT 353 were mainly excavated in a layer of relatively hard limestone of better quality than that of TT 71. This has allowed the craftsmen to carve reliefs as part of the decoration in chamber A. However, to reach this limestone layer the workmen had to tunnel through a layer of *tafl* (see image 7),

³⁴² Dorman (1991), 26 & plate 7b.

³⁴³ J. Galán (2014), "The rock-cut tomb-chapels of Hery and Djehuty on the West Bank of Luxor", 5.

³⁴⁴ L. Lee & S. Quirke (2000), "Painting Materials", 117-118.

that is part of the Esna Shale Formation³⁴⁵ and which is similar in consistency to much of the rock in and around TT 71.

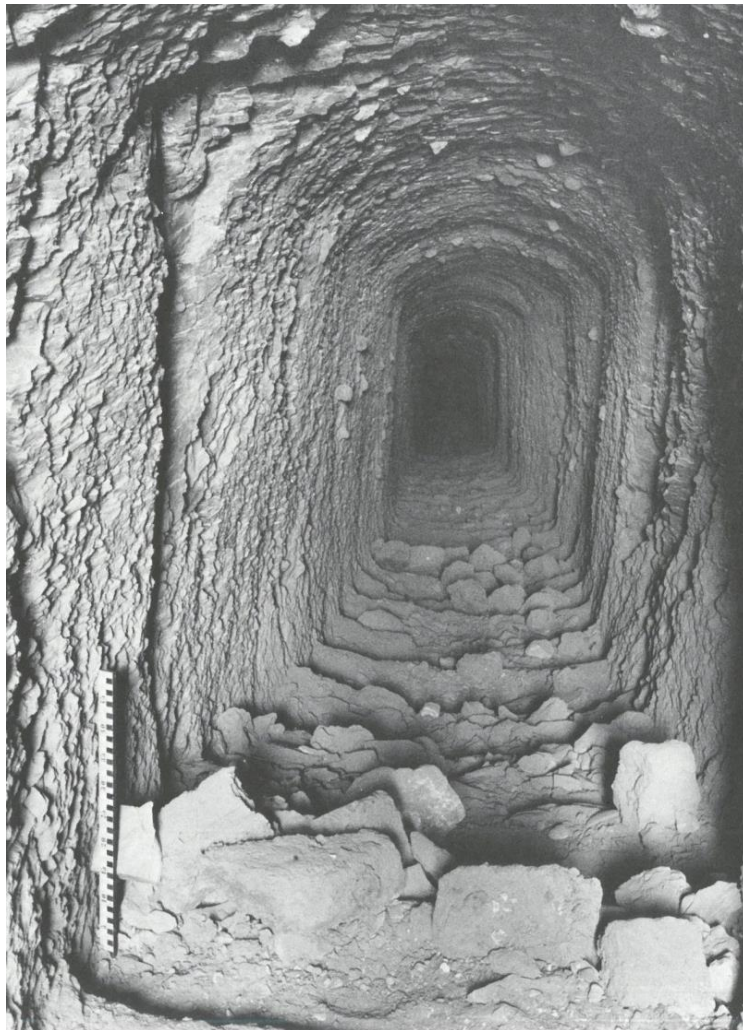


Image 7 - The upper part of the corridor leading from the entrance to chamber A. Compare the rough undecorated walls of this part of the corridor to the relative smooth wall at the opposite end opening into chamber A (see image 8 below) of TT 353. From Dorman (1991), plate 53a.

After 51.4 meters of tunnelling downwards at a 25 degree angle, the workmen would have found the desired harder and more compact layer of chalky limestone known as ‘Tarawan Chalk’,³⁴⁶ approximately 23 meters vertically under the floor of the quarry where they started (see figure 8).³⁴⁷ It is below this transition that the chambers and other architectural features of the tomb are found (see image 8), whereas the corridor above is completely undecorated and only roughly cut. This seems to indicate that the craftsmen knew that there would be layer below the *tafl* which was better suited to tomb building. As both tombs of Senenmut were built at the same time,³⁴⁸ the knowledge of the geological layers of the area was arguably

³⁴⁵ Cf. C. Dupuis *et al.* (2011), “Genesis and geometry of tilted blocks in the Theban Hills, near Luxor (Upper Egypt)”, 247-251 + fig. 6.

³⁴⁶ Cf. Dupuis *et al.* (2011), *op. cit.*, fig. 4 + fig. 6.

³⁴⁷ Dorman (1991), 92.

³⁴⁸ Dorman (1991), 162-163.

also available to the craftsmen who were working on TT 71. Consequently, the site of TT 71 must have been chosen because of its location and elevation as its unsuitable geological qualities would have been well-known.



Image 8 - Chamber A with part of the astronomical ceiling, approximately 1.75 meters above the chamber floor. Notice the relatively smooth undecorated surface of the wall in the corridor and the carved relief of the chamber wall to the right. From Dorman (1991), plate 55a.

3.1.4 The volume of the tombs

The two tombs are not only different in their architectural features and layout; they also differ significantly in sizes. This is in part due to the geological layers in which they were built, but in all likelihood also to the purpose of each structure. TT 71 was meant to be large and visible, whereas TT 353 was to be much smaller in order to be hidden.³⁴⁹ TT 71 has a layout of 201.6 m² in area and 803.9 m³ in volume, which makes it the seventh largest 18th Dynasty Theban private tomb. Compared to this, TT 353 is number 120 of 213 tombs in size with its 220 m³ in volume and its 123.7 m² in area.³⁵⁰ Considered together as one funerary monument and adding the size of TT 353 to TT 71 places it with its 1023.9 m³ in volume and with its 325.3 m² in the overall fifth place in the 18th Dynasty. Only Kheruef (TT 192), Ramose (TT 55), Amenemhet (TT

³⁴⁹ Dorman (1991), 163.

³⁵⁰ This includes all 18th Dynasty private tombs from Thebes, including the tombs whose volume has been calculated based on averages from other tombs. TT 353 is overall number 40 in size among the 1D and 2D tombs.

48), and Kenamun (TT 93) have larger tombs, but they all date to later in the dynasty when tombs are generally larger (see chapter 4, figure 28); the first three during the reign of Amenhotep III and Kenamun from the time of Amenhotep II. From the beginning of the 18th Dynasty up until and including the reign of Thutmose III there was no person from a volumetric perspective in the Theban area who had as much economic influence as Senenmut. The opportunity to divert resources from other institutions or projects was probably possible mainly through the office of “Steward of (the House of) Amun” (*im.y-r pr n (pr) Imm*) which Senenmut was the first to hold.³⁵¹ His many other offices,³⁵² for example “Master Chief of the Royal Household” (*hry-tp ʕ m pr-nsw*) or “Sealbearer (of the King) of Lower Egypt” (*sdʕwty-bity*),³⁵³ probably gave him additional access to resources that could be used in the building of his own tomb. However, even based on nothing more than the size of the two tombs, Senenmut can be considered one of the most powerful private individuals of the dynasty, both financially and in terms of political influence.

3.2 The ostraca

This section analyses the content of the administrative ostraca, or work documents, found near TT 71 and those from Deir el-Bahri, all published by William C. Hayes. The ostraca illustrate various aspects of the process of tomb construction, from the initial excavation of the rock to the final design of the decoration on the walls of the tomb.

153 ostraca were published by Hayes in his 1942 *Ostraka and Name Stones*, 149 of which had been found during the excavations of the Metropolitan Museum in 1930-1931 and 1935-1936. Of the remaining 4 ostraca, 1 was found by Norman de Garis Davies in 1920 and the last 3 were found below Theban Tomb 252. All of them are, either by archaeological context or textual reference, connected to the tomb of Senenmut. Hayes divides the ostraca into two main categories, drawings and inscriptions, and subdivides the latter into hieroglyphic and hieratic ones.³⁵⁴ Many of the ostraca classified as drawings relate to the decoration program in the tomb itself, e.g., ceiling patterns and test sketches of human figures clearly meant to be redrawn onto the tomb walls. Others are seemingly drawings made to simply pass the time, made, according to Hayes, without style, accuracy, or purpose.³⁵⁵

³⁵¹ B. Haring (2013), “The Rising Power of the House of Amun”, 619.

³⁵² Dorman (1988), Appendix 3, 203-212.

³⁵³ Uphill, E. P. (1975), The Office *sdʕwty bity*, 250.

³⁵⁴ Hayes (1942) 5.

³⁵⁵ *Ibid.*

Two ostraca contain architectural drawings,³⁵⁶ and according to Hayes, they are plans for the inner pit found in TT 71. Hayes also suggests that O. 32³⁵⁷ is an earlier version of the same plan as O. 31, that then proved too small, and was thus discarded before any measurement markings, as the ones found on O. 31, could be added. However, as later excavation and analysis of the tomb revealed, the inner pit is actually a cave-in to a tomb below and therefore not a planned feature of TT 71.³⁵⁸ The plans could represent the intended layout of one or both of the pits in the forecourt of the tomb,³⁵⁹ but as neither of these were finished apart from the vertical shaft, this cannot be ascertained. The plans most likely represent a different tomb, but they do not resemble the layout of any of the neighbouring tombs in the immediate area, which nearly all follow the common T-shape of the 18th Dynasty. Instead, the drawings bear a remarkable similarity to the layout of Senenmut's other tomb in Deir el-Bahri, TT 353, in particular the chambers and hallways at the westernmost and deepest end. This would imply that the scribe responsible for the two ostraca probably worked on both tombs, and that he discarded them while inspecting or visiting TT 71. The measurements on O. 31 do not correspond completely to the tomb chambers and particularly to the width of the hallway, which on the plan is 3 cubits, but in the tomb only about 2 cubits. This could be explained by a later alteration of the design or simply by the stonecutters following the natural strata of the rock without too much concern for the intended layout. There is one other tomb that the drawings resemble: TT 61, which lies just below TT 71 and in the area where the ostraca were found.³⁶⁰ The dimensions do not, however, correspond to the measurements on O. 31 any more than they fit TT 353.

While the documents in all probability were created in close proximity to the tomb of Senenmut, using the most suitable limestone flakes from tomb construction debris, the purpose of the texts is somewhat harder to determine. The many drawings of figures and patterns on the ostraca, some even within the distinctive and well known grid system,³⁶¹ were probably preliminary sketches before being drawn and painted in full size in the tomb.³⁶² The same is true for the ostraca bearing hieroglyphic inscriptions: they functioned as preliminary sketches to be transferred onto the tomb walls,³⁶³ although not all of the texts, drawings or patterns can be found on the tomb walls. The existence of hieratic ostraca found in the same context as the work documents, but not pertaining to the construction of the tomb, namely literary and religious texts, is

³⁵⁶ Ostrakon Cairo CG 66262, which in Hayes (1942), 15, is labelled as number 31, and ostrakon "Hayes 32".

³⁵⁷ To avoid as much confusion as possible, I use this designation for the ostraca published in Hayes 1942 and not their museum entry numbers, if any given.

³⁵⁸ Dorman (1991), 29.

³⁵⁹ See Dorman (1991), 25.

³⁶⁰ Hayes (1942), 4.

³⁶¹ For the use of the system, see for example G. Robins (1994), *Proportion and style in ancient Egyptian art*, 87-159 and 254-255; Rossi (2010), 122-128.

³⁶² Hayes (1942), 3.

³⁶³ Hayes (1942), 5. See also, the religious texts on the walls of TT 87 were demonstrably transcribed from ostraca. Cf. B. Lüscher (2013), *Die Vorlagen-Ostraka aus dem Grab des Nachtmin (TT 87)*.

explained by Hayes as having been produced by scribal pupils.³⁶⁴ These pupils would presumably have followed their master or tutor to the construction site and copied various pieces of literary or religious texts onto ostraca, which were then deposited alongside the other tomb construction documents.³⁶⁵

I agree with Hayes' interpretation partly because I see no other way of explaining the finding of literary texts within the artificial terrace, which at the very least means that they were deposited there during the construction, and partly because some of these texts are written in a less trained hand than the work documents.³⁶⁶ The hieratic ostraca from TT 71 not relating to the construction of the tomb constitute a large corpus in itself, and span many genres from literary texts, religious compositions, and mathematical calculations to graffiti, jar labels, and pieces simply inscribed with dates or personal names. However, interesting as these ostraca are, they will not be further analysed in terms of content in the present thesis, although they provide an idea regarding the range of textual material brought to or produced at the tomb construction site of TT 71.

The hieratic texts most relevant for the present thesis are those labelled by Hayes as work records, lists of workmen, rations and supplies. In addition, although only adding the information that the tomb was inspected, 1 other ostrakon describes a visit to the work site by a scribe. All of the ostraca are made from limestone flakes, except for two (93 and 96) which are ceramic sherds and contain lists of rations or supplies. The 36 ostraca were found in various locations around TT 71:³⁶⁷ three in the forecourt of the tomb (62, 82, and 83), 22 below the tomb (63, 65, 67, 68, 71, 72, 74, 75, 79-81, 85, 87-93, 95-97), 5 in the forecourt of TT 121 (69, 76-78, 84), and 6 in the forecourt of tomb MMA 850 (64, 66, 70, 73, 86, 94). The latter tomb is a Saff-tomb from the Middle Kingdom and was accidentally broken into by the builders of TT 121 in the 18th Dynasty while excavating a tomb shaft.³⁶⁸ Both TT 121 and MMA 850 lie just to the northeast of TT 71 and at a slightly lower level, and the finding of ostraca connected with the latter tomb is explained by the collapse of Senenmut's northern retaining wall of the artificial terrace into the courtyards of the two other tombs.³⁶⁹ The terrace was, according to Hayes, mainly built in stone excavated from the tomb and so suitable pieces for writing were readily available. When the information on the ostraca had

³⁶⁴ Hayes (1942), 3.

³⁶⁵ One of these, O. 149, had on the recto the beginning of the Story of Sinuhe. Hayes (1942), 29. According to R. Parkinson (2009), *Reading Ancient Egyptian Poetry*, 181, the handwriting on this ostrakon is suggestive of an exercise.

³⁶⁶ See for example O. 141, O. 142, and O. 143, which all display a cramped style with the different lines being less than parallel to each other.

³⁶⁷ Hayes (1942), 4.

³⁶⁸ P. Piccione (2001), *Theban Tombs Publication Project: Theban Tombs No., 72 (Ray) and 121 (Ahmose): A report to the permanent committee of the SCA 2001 Field Season*, ASAE 79, 127-135.

³⁶⁹ Hayes (1942), 4.

been used, transferred to papyri, or was no longer valid, the individual pieces were thrown in the construction area of the terrace.³⁷⁰

In 1960, Hayes published another group of ostraca, this time from the larger temple area in Deir el-Bahri.³⁷¹ 21 ostraca from a much larger corpus of 400 found by the Metropolitan Museum's excavations in 1920's and 30's, these documents represent three separate and specific ancient construction areas that also define Hayes' presentation of the material.³⁷² The first group (11 ostraca) relates to the *Djeser-djeseru* of Hatshepsut and its foundation, construction, and later maintenance. The second group (4 ostraca) concerns Senenmut's second tomb (TT 353), and the third group (6 ostraca) gives insights into the building tasks in two temples of Thutmose III, the *Djeser-akhet* and the *Djeser-menu*. The most immediately relevant group of documents for this thesis are those that concern the tomb of Senenmut, found close to the entrance of that very tomb. Three of these ostraca also have a direct connection to Senenmut in the contents of the texts.³⁷³ The two other groups are, however, by no means irrelevant as they provide useful information on the general construction and building administration in the period in question. The materiality of the 21 documents is, compared to those found near TT 71, of a slightly different nature. 13 are limestone flakes, three are made from shale (*tafl*), and five are made from broken pieces of ceramics or pottery.³⁷⁴ The presence of shale material (Esna shale - see also 3.1.3 above) relates to the geological composition of the Deir el-Bahri area.³⁷⁵

Returning to the purpose of the administrative ostraca from TT 71, Hayes suggested that the entries were either "*entered in a permanent record book or its content reported to the high command*".³⁷⁶ In his work on similar ostraca from the Valley of the Kings, Andreas Dorn suggests, albeit tentatively, that these seemingly administrative ostraca possibly did not have a documentary purpose, but were simply writing exercises.³⁷⁷ The purpose for the ostraca found in connection to TT 71 may very well be both, neither, or a compromise between the two viewpoints. What is true for one text is possibly not true for another, and the overarching purpose for the ancient scribe writing a text on an ostrakon eludes us still. That being said, I am inclined towards the suggestion made by Hayes, that the information within the ostraca was somehow transmitted onwards in the administrative system, perhaps after being transcribed onto papyri. The writing for writing's sake, or empowering of the scribe,³⁷⁸ does not seem to be the main point of the TT 71 or Deir el-Bahri

³⁷⁰ Hayes (1942), 3.

³⁷¹ Hayes (1960), "A Selection of Tuthmoside Ostraca from Der el-Bahri". In *JEA* 46, 29-52.

³⁷² Hayes (1960), 30.

³⁷³ Ostrakon 13, 14, and 15 in Hayes (1960).

³⁷⁴ Hayes (1960), 30-47.

³⁷⁵ A. Niwinski *et al.* (1999), "Deir el-Bahari Cliff Mission, 1999", 180-181.

³⁷⁶ Hayes *op. cit.*

³⁷⁷ Dorn (2011), *Arbeiterhütten im Tal der Könige*, 142.

³⁷⁸ See the introduction (1.5.2).

ostraca, although it may certainly have played a role, simply because there are too many detailed points on specific issues being recorded.

3.3 - Relative chronology

The relative or internal chronology of the administrative ostraca, or work records as Hayes labelled them,³⁷⁹ from TT 71 determines the minimum length of time for the building of the tomb. Hayes states that “*The period during which the great majority of the ostraka were made probably did not exceed half a decade.*”³⁸⁰ It is, however, not entirely clear why Hayes was of this opinion or why he opted for the chronological sequence (see below table 3), which is presented in his *Ostraka and name stones*.³⁸¹

Year 7	62 (Year 7, 4 <i>prt</i> , day 2), 63 (4 <i>prt</i> , Day 5), 64 (4 <i>prt</i> , Day 5), 65 (4 <i>prt</i> , Day 25), 66 (?), 67 (?), 68 (? , Day 13)
Year 8	69 (4 <i>ꜥht</i> , Day ?), 70 (2 <i>prt</i> , Day 12)
Year 9	71 (2 <i>ꜥht</i> , Day 19), 72 (2 <i>prt</i> , Day 20), 73 (2 <i>prt</i> , Day 26)
Year 10	74 (1 <i>ꜥht</i> , Day 28), 75 (4 <i>ꜥht</i> , Day 20), 76 (?), 77 (2 <i>šmw</i> , Day ?), 78 (?), 79 (?)
Year 11	80 (Year 11, 3 <i>ꜥht</i> , Day 27), 81 (?)

Table 3 - Hayes' chronological sequence of the ostraca labelled as 'Work Records' from TT 71.

The main issue with Hayes' sequence is that his chronology is based on the find of ostrakon 62, which refers to year 7, in the courtyard of TT 71. Unfortunately, this document makes no reference to Senenmut or the tomb itself and could be describing the beginning of work on another tomb. Assuming that it does belong to TT 71, and as such documents the starting point for the construction of the tomb, it is still possible to improve the sequence of the ostraca by rearranging it. The bulk of the ostraca were found within or below the artificial terrace that was erected to become the forecourt of TT 71 and their connection to the tomb itself is therefore highly probable. Still, if O. 62 was excluded from the corpus, the remaining documents would fit into a single year or could be otherwise arranged around O. 80 that includes the date from year 11, the only anchor point for absolute chronology.

One argument that could give credence to and perhaps even strengthen Hayes' timeframe, if not his sequence of events, is the average yearly production rate of Theban tombs in the 18th Dynasty.³⁸² TT 71 has a volume of 803.87 m³ and the construction rate during this dynasty was 197.9 m³ per year on average. Dividing the construction rate by the size of the tomb gives a building time of 4.06 years. The time span

³⁷⁹ Hayes (1942), 21-23.

³⁸⁰ Hayes (1942), 7.

³⁸¹ Hayes' chronological placing of the ostraca, although never explained or specified, adheres to the ancient Egyptian division of the year starting with the four months seasons of *Akhet*, *Peret* and ending in *Shemu*.

³⁸² For a detailed description see chapter 4.1.1 (construction scale baseline) below.

between the dates on O. 62 and O. 80 is 3 years, 7 months, and 25 days, which is close to 4.06 years.³⁸³ There is also the content of the text in O. 62 to consider and especially the measurements that are mentioned. The 29 *nbi* rods mentioned in the inverted line 6 are meant as a measurement of length, equivalent to 20.3 meters (see below 3.4.1.1), a distance that simply does not fit with any of the nearby tombs. The *nbi* measure relates in all probability to the length of the façade of TT 71, which at the base is 22.3 meters. All in all, it is very probable that O. 62 does belong to Senenmut's tomb and as such records the starting point for its construction. The date of the ostracon should also be compared to the date on a jar-label from the tomb constructed below TT 71 for Senenmut's parents, Ramose and Hatnofer (see image 4 above), which records Year 7, second month of Peret, day 8. This is only 54 days before the date on O. 62, which would indicate that Senenmut and presumably his brothers, Minhotep, Amenemhet, and Païry,³⁸⁴ made the final arrangements for their burial during this time. In any event, this tomb was completely sealed off by the artificial terrace that was constructed for TT 71, and was still intact and undisturbed by January 11, 1936, when it was discovered by Lansing and Hayes.³⁸⁵

In table 4, I suggest an alternate relative chronology, which is based on the content of the texts, in particular the construction terminology (see 3.4 below), starting with O. 62 in year 7. I do not, however, offer a concrete suggestion for an end date for the project as this does not figure in the documents. I instead refer to the construction scale baseline (see 4.1.1 below).

<u>Year 7</u>	62 (Year 7, 4 <i>pṛt</i> , day 2), 90 (1 <i>šmw</i> , Day 16 + 19), 77 (2 <i>šmw</i> , Day ?), 103 (2 <i>šmw</i> , Day ?), 106 (2 <i>šmw</i> , Day 26)
<u>Year 8</u>	74 (1 <i>zḥt</i> , Day 28), 71 (2 <i>zḥt</i> , Day 19), 69 (4 <i>zḥt</i> , Day ?), 75 (4 <i>zḥt</i> , Day 20), 76 (?), 70 (2 <i>pṛt</i> , Day 12), 72 (2 <i>pṛt</i> , Day 20), 73 (2 <i>pṛt</i> , Day 26), 82 (3 <i>pṛt</i> , Day 6), 84 (3 <i>pṛt</i> , Day 18), 98 (3 <i>pṛt</i> , Day 20), 99 (4 <i>pṛt</i> , Day 3), 63 (4 <i>pṛt</i> , Day 5), 64 (4 <i>pṛt</i> , Day 5), 65 (4 <i>pṛt</i> , Day 25), 66 (?)
<u>Year 9 and 10</u>	
<u>Year 11</u>	80 (Year 11, 3 <i>zḥt</i> , Day 27), 67 (?)
<u>Unknown year</u>	68 (? , Day 13), 78 (?), 79 (?), 81 (?)

Table 4 - Chronological sequence of the 'Work Records' based on the context of the documents. To this are added the supply and name lists (in red) according to their dates. Question marks are used to indicate lost or unrecorded dates.

Table 2 incorporates both the work records and the lists of workmen, rations, and supplies that have dates inscribed and the undated ostraca based on what is described in the text. For example, the reason why O.

³⁸³ An observation that should be mentioned is that all the recorded dates in the ostraca are, apart from one, either from the season of *Akhet* or *Peret*, which possibly indicates a preferred time of the year to be working on a tomb, at least in relation to the work carried out in these documents. Or, said in another way, that the season of *Shemu* was not the preferred time to be working directly on the tomb of Senenmut. The delivery documents do, however, record the season of *Shemu* more often than the work documents.

³⁸⁴ Cf. Dorman (1988), 165.

³⁸⁵ Cf. Hayes (1957), "Varia from the Time of Hatshepsut", 78-80, pl. X (4). In *Mitteilungen des Archäologischen Instituts Abteilung Kairo*, band 15 (Wiesbaden: Otto Harrassowitz), 78-90.

67 is placed relatively late in the new relative chronology is because the text refers to the ‘passage/corridor towards the back’ ([...] *šmnt r p3 nfrw* [...]).³⁸⁶ Hayes translates and interprets the *p3 nfrw* as ‘(the) back part’, “rear”, or “inner end” of the tomb,³⁸⁷ which very likely is the furthest point from the entrance, although it is unclear whether this refers to the entire axial hall or only its western end. However, this must mean that the masons were nearing the completion of the excavation and, arguably, the overall construction as well and dating it towards the end of the relative chronology seems justified. On the other hand, the placement of O. 90 at the very beginning is based on three assumptions: First that the relatively large numbers (90 and 60) ascribed to two persons are supposed to represent workers under each person’s authority. Secondly, that a large number of workers would be more manageable and efficient in an open work environment rather than inside a tomb, and thirdly, that work on the façade, retaining walls and courtyard was constructed early in the building process (see 3.6.3 below).

The relative chronology listed in table 4 gives the impression that construction work on TT 71 for the most part took place in the early phase and based on the content of the ostraca this is a plausible scenario. Nevertheless, the overall timeframe of the project as described in the dated ostraca, O. 62 and O. 80, was 3.64 years. Combined with the timeframe of 4.06 years of the construction scale baseline (see 4.1.1), a reasonable suggestion for the construction time of about four years TT 71 seems realistic. As the bulk of human resources were needed at the beginning of the project when they could physically be fitted into the work area outside the tomb, the documentation for managing the workers is also at its highest. As less people are needed and fewer but more specialised workers can be fitted into the tomb, the need for managing them also decreases, which produces less documentation.

3.4 Construction terminology

Part of mapping the process of tomb construction involves understanding the individual steps in the building process. Such an understanding complicated by the fact that the specific meaning of the terms used in the texts is not agreed upon by Egyptologists. In the following sections I will describe the terms used in the Senenmut ostraca and propose a translation for them that fit the parts of the building process. The relative chronology described above build on this analysis of the construction terminology.

³⁸⁶ *šmnt* also occurs in O. 74. Cf. Hayes (1942), 39.

³⁸⁷ Hayes (1942), 37.

3.4.1 - Measurements

3.4.1.1 - *nbi*

The *nbi* rod is central to the understanding of the work records from TT 71. The importance of the *nbi* lies in the fact that it was used to describe the results of the day-to-day production, and it appears eight times in four ostraca³⁸⁸ where it was used alongside the royal cubit. It will be argued here, based on the discussion below, that the *nbi* rod was a unit of measurement equal to 70 cm in length, used since at least the Middle Kingdom until the 19th Dynasty. It is connected to the royal cubit of 52.5 cm by being $1\frac{1}{3}$ the length of the latter, and the royal cubit is in turn $\frac{3}{4}$ the length of the *nbi*.

The *nbi* is a unit of measurement referred to in the ancient documents and has been discussed by modern scholars for a relatively long time. Herbert Thompson defined the unit as a measurement for volume, more specifically one used for the mass of earth in dikes and connected to the taxation through forced labour.³⁸⁹ He identified the *nbi* as being the forerunner for the Greek word “*naubion*” which is equivalent to the double royal cubit in length (105 cm), but here used as a cubic measure with sides the length of a “*naubion*”, i.e. 8 cubic-cubits or 1.158 m³.

When translating and commenting on an ostrakon (*Hieratic Ostrakon no. 1* – BM EA 66302) found near the temple of Seti I in Abydos, Battiscombe Gunn accepted Thompson’s definition of the *nbi* and also saw it as a unit of volume specifically used in the construction of dikes.³⁹⁰

Hayes interpreted the *nbi* as a unit of length of about 65-77cm³⁹¹, but at the same time accepted that in some instances it had to refer to a measurement of volume. When describing O. 62, he therefore suggests that the 29 *nbi* that 30 men ‘did’ (*ir(i).n*) in line 5 must be meant as cubic *nbi*, i.e. that the scribe already knew that the measurement was supposed to be that of volume but nevertheless referred to it as a unit of length.

Gardiner originally agreed with Thompson, with whom he co-authored the publication of Theban ostraca.³⁹² However, seeing the explanation of the unit offered by Hayes in relation to the proportions of TT 71, Gardiner modified his view and now interpreted the *nbi* as being “*perhaps equal to $1\frac{1}{4}$ or $1\frac{1}{3}$ of a Royal cubit*”.³⁹³

³⁸⁸ O. 62, O. 69, O. 73, and O. 75

³⁸⁹ A. H. Gardiner, H. Thompson, & J. G. Milne (1913), *Theban Ostraca*, 26 n. 3.

³⁹⁰ B. Gunn (1933), “The graffiti and ostraka”, 92-94.

³⁹¹ Hayes (1942), 36-37.

³⁹² Gardiner *et al.* (1913), *op. cit.*

³⁹³ A. H. Gardiner (1957), *Egyptian Grammar*, 199.

Because both the *nbi* and the royal cubit are used side by side in the ostraca from TT 71, Naguib Victor argued in 1991 for an easier and more precise correlation between the rod and cubit system.³⁹⁴ He examined architectural features of more than 150 rock-cut tombs at eight different Old and New Kingdom sites, and found that there was a remarkable repetition of specific measurements as multiples of 2.5 cm, which included the 52.5 cm of the cubit length. In addition, he found multiples of 70 cm, which were found in several features such as the length, width, depth, and height of the tombs, but also in architectural details such as false doors, pillars, niches, and facades. Victor then came to the conclusion that 70 cm must be the length of the *nbi*.

Physical evidence for the 70 cm *nbi* does exist, although it is just as rare as the textual references. Three wooden rods can be found in two museums: the Petrie Museum and the Metropolitan Museum of Art. The first rod is UC16747 (see image 9), which is described as a “*wooden cubit rod, pointed at each end [Found at: Lahun; Context: Kahun Town]*” from the Middle Kingdom Dynasty 12, which has a length of 67.3 cm. The length does not correspond to or is a multiplication of either the royal or common cubit measures. This applies to the length of the other rods presented here as well.

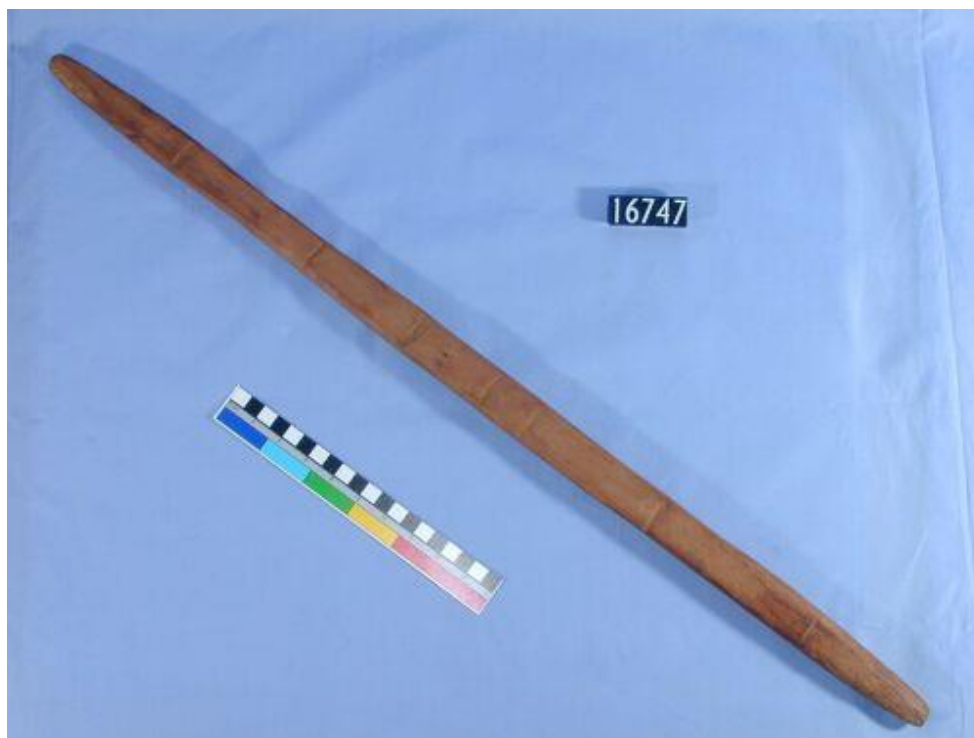


Image 9 - UC16747. This measuring rod has a length of 67.3 cm. Photograph by The Petrie Museum of Egyptian Archaeology UCL.

The second and very similar rod is also in the Petrie Museum: UC80579 (see image 10) which on the museum label is described as a “*Egyptian wood cubit rod (680 mm) with slight bevelled edges and burnt ends, XII Dynasty (Kahun) 2.000 BC. Inscribed with 7 palm divisions (85 to 100)*”.

³⁹⁴ N. Victor (1991), “The Rod (*nbi*) and its Use in Egyptian Architecture”, 102.



Image 10 - UC80579 - The object lies between the above mentioned UC16747 and a broad wooden throw stick; UC7294. I have so far been unable to find it in a museum catalogue or online. Author's photograph - March 2017.

The third rod, MMA 15.3.1128, is also described as a “*cubit measuring rod*” of 70.5 cm in length and is dated to the Middle Kingdom (Dynasty 12 or 13). It was given to the Metropolitan Museum by the Rogers Fund and originates from MMA excavations in the Memphite Region during 1915-16.

The rods support Victor’s argument for a 70 cm *nbi*, and their Middle Kingdom date further indicates that the *nbi* was an established unit of length by the 18th Dynasty. Unfortunately, no rods have been found from the Theban area or from the 18th Dynasty.³⁹⁵ However, through my own work with the Theban area I have found that many of the tombs reveal architectural proportions that could correspond to the 70 cm rod. In the following, I present some relevant examples of these architectural features from the tombs of Senenmut and TT 100 (tomb of the vizier Rekhmire).

The axial hall in TT 71 measured from the outer door jamb to the west wall is 17.5 m, or $33\frac{1}{3}$ cubits or 25 *nbi* long. The height of the columns in the transverse hall from base to capital is 3.5 m, or $6\frac{2}{3}$ cubits or 5 *nbi*. The average thickness of the 8 columns is 1.4 m, or $2\frac{2}{3}$ cubits or 2 *nbi*. The length of the first passageway in TT 353 (i.e., from the top step of the staircase to the eastern wall of room A) is 54.6 m, or 104 cubits or 78 *nbi*. The length of the second passageway from the eastern wall of room A to western wall of room B is 22.4 m, or $42\frac{2}{3}$ cubits or 32 *nbi*. In TT 100, the axial hall from the western wall to the western wall of the transverse hall is 28 m, or $53\frac{1}{3}$ cubits or 40 *nbi*. The width of the axial hall is 2.1 m, or 4 cubits or 3 *nbi*.

³⁹⁵ Although, mislabelling in the museums and faulty digital descriptions could be an important factor to consider.

As shown in the examples above, the proportions of the architecture fit the *nbi* of 70 cm better than the royal cubit of 52.5 cm: the *nbi* measurements are often whole numbers where the royal cubit measurements are not. Architectural features that are multiples of 70 cm seem to occur frequently in the 18th Dynasty Theban private tombs and the *nbi* should therefore be considered a measure for length and not volume.³⁹⁶ The *nbi* measurement has, however, in certain cases been understood by Egyptologists as a sort of ‘short hand’ for measures of volume and/or area, most notably in ostracon 62 where only the 29 *nbi* are mentioned in relation to the work (*h33.t*) done by 30 men. This is due to a misinterpretation of that specific passage where the need for volumetric measurement has been presupposed, but which I argue it is not (see chapter 3.4.2.1 below).

3.4.1.2 - *dni*

The *dni* is a measure for volume. It probably refers to a sack or basket with a volume of 145 litres, which corresponds to 1 cubic cubit (0.525 m x 0.525 m x 0.525 m = 0.1447 m³ or 144.7 litres).³⁹⁷ I will argue here that the *dni* was used to keep track of the construction progress by measuring the excavated rock removed from the tomb. This was probably done by filling the *dni* to the brim and then counting the number of sacks/baskets filled during the day (cf. image 11 below).

As the main measurement of volume in Theban tomb building projects, the *dni* measure is of vital importance when it comes to calculating the average construction output. However, there are several translations and interpretations of the word, and it occurs in numerous texts that have nothing to do with the excavation of tombs. The following gives a brief summary of previous scholars’ discussion of the *dni* and takes a closer look at the textual material in which the term appears.

Traditionally, the term has been associated with ‘dam’ or ‘dike’,³⁹⁸ which in a tomb construction setting could be explained in relation to building the retaining walls above the façade or on either side of the open courtyard. However, this does not seem to be the case in the ostraca from TT 71 where the term *dni* is mentioned a total of 6 times in 5 different documents and in every instance relates to work done inside the tomb.³⁹⁹ The term is mentioned alongside a numerical value that signifies the amount that has been achieved in the text, and thus it is in this context translated as ‘section’ or ‘area’, and for Hayes it is a

³⁹⁶ Dorman also refers to this in his addenda indicating that he agrees with the length of 70 cm. Dorman (1991), 171.

³⁹⁷ Černý (1973b), 19-21.

³⁹⁸ *dni* is translated similarly by the following: Gardiner (1957), 602: “to dam off, restrain – *dnit* = dam (n.)”; Faulkner (1962), 314: “to dam, construct, restrain, hold back, revet”; Erman & Grapow (1971), V, 464: “abdämmen, befestigen, zurückhalten”; by Lesko (1989), 135: “to dam, to dyke, to block up, to be checked, stopped”.

³⁹⁹ O. 63 recto l. 4 and 5, O.64 recto l. 3, O.65 l. 5, O.67 l. 4, and O.69 l. 3.

measure of a two-dimensional area of a surface, most likely that of a wall, but which is never specified in the documents.⁴⁰⁰

Gunn translates the term as both the verb “dike-making” and the noun “dike” when analysing the ostracon from Abydos⁴⁰¹ that also mentions the *nbi* measure. The same passage is translated by Kitchen as “dyke (-making)” and “canal”.⁴⁰²

Černý refutes the translation of the *dni* as ‘area’, drawing attention to O. Gardiner 26 (O. Ashmolean HO 26) and O. Gardiner 51 (O. Ashmolean HO 51).⁴⁰³ From these texts he concludes that the *dni* is equal to a measure of capacity of 1 cubic cubit, most probably a basket. “*It is natural that the cubit should be not only a unit of length but also the basis of capacity*”.⁴⁰⁴ In his PhD thesis on the ancient Egyptian cubits, Antoine Hirsch came to the same conclusion as Černý and defined the *dni* as a cubic cubit and, as a major part of his argument, linking it and the *nbi* to the royal system of measurements.⁴⁰⁵ In preparing a publication of a number of ostraca, Malte Römer also interpreted the *dni* as a container for measuring the volume of stone, probably a basket.⁴⁰⁶

While focusing mainly on the price of various objects, Jac. J. Janssen describes the *dni(t)* as a basket, but while referring to the other examples and translations of other scholars he does not offer a precise definition of the term.⁴⁰⁷ Correspondingly, Wolfgang Helck refers to a special kind of *dni*-basket which was explicitly said to have been woven from reed grass and other similar materials.⁴⁰⁸ Rainer Hannig defines the *dni* as a cubic cubit or “Kubikelle”⁴⁰⁹ which he bases on O. Ashmolean 26. Here, the unit *dni* clearly relates to the cubit, although the exact relationship remains unclear. The text states that “6 cubits by 2 cubits deep and 4 cubits makes 40 *dni*” (*mḥ 6 r mḥ 2 mḏwt mḥ 4 ir(i).n dni 40*)⁴¹⁰, which Hannig changes to 48 *dni* because it resolves mathematically (6 x 2 x 4 = 48). Whether the recording of the number 40 is a mistake remains unclear, but the mention unit *dni* used to mark it does not seem to be a mistake.

⁴⁰⁰ Hayes (1942), 21-22 + 40-41.

⁴⁰¹ Gunn (1933), 92-93.

⁴⁰² Kitchen (1993), 107.

⁴⁰³ Černý (1973b), 20-21.

⁴⁰⁴ Černý (1973b), 21.

⁴⁰⁵ Hirsch (2013), Ancient Egyptian Cubits, 119.

⁴⁰⁶ Personal communication with PD Dr. Römer on October 19th 2016.

⁴⁰⁷ Janssen (1975a), 140-143. Compare with P. Kahun XIX, 41 in F. Ll. Griffith (1898), *The Petrie Papyri. Hieratic Papyri from Kahun and Gurob*, 49 pl. XIX.

⁴⁰⁸ W. Helck (1964), *Materialien zur Wirtschaftsgeschichte des Neuen Reiches (Teil VI)*, 918-919.

⁴⁰⁹ Hannig (2006), *Großes Handwörterbuch Ägyptisch - Deutsch (Marburger Edition)*, 1054.

⁴¹⁰ O. Ashmolean HO 26, l. 5.

Many other textual sources provide evidence for the use of the *dni* measure, but these are often for different purposes than in the Senenmut corpus.⁴¹¹ The closest parallel is found in a similar, albeit smaller, corpus from TT 29 which is unpublished.⁴¹² These texts document the construction of TT 95, which belonged to the High Priest of Amun, Mery, who lived during the time of Amenhotep II. TT 95 is slightly larger⁴¹³ than TT 71,⁴¹⁴ but is otherwise constructed in fairly similar rock in terms of quality. This makes the comparison between the textual evidence from both tombs relevant.

The term *dni* is mentioned in the ostraca from TT 29 a total of 11 times in 6 documents.⁴¹⁵ In the first ostrakon, O. 291492, where the term occurs three times, the first mention is of a stonecutter (*hrty*) and his daily work of two *dni*. The second mention is the monthly output for two men of 30 *dni* and the third occurrence is the monthly output of 15 *dni* done by one man. The second document, O. 291239, lists another monthly output of two stonecutters, but this time only of 20 *dni*. Ostrakon 291437 is damaged and does not reveal what the two *dni* recorded refer to, but the numbers 25 and 45 for the fifth and sixth occurrence of the term are clear and most likely record another monthly work output. In the next document, O. 291386, it is clear that the two mentions of the unit refer to monthly amounts; on the recto side 30 *dni* for six men and 20 *dni* on the verso. Due to damage of the ostraca, the latter reference does not mention to how many workers it refers. In the next document, O. 291436, one stonecutter and a now lost number of other men did a monthly work amount of probably 20 *dni* on the recto and two stonecutters and one man carrying the rubble (*hm^c*) do another 20 *dni* on the verso. In the final document to mention the term, O. 291491, four stonecutters and one man carrying rubble did 30 *dni* from day one to the last day of the month.

Noticeably, all the *dni* amounts recorded in the TT 29 corpus are round numbers and it is therefore possible that the records show not the actual work but instead the intended work, i.e. budgeted work quotas. This interpretation would, however, depend on the actual moment of writing the ostraca which is difficult to ascertain. What this corpus clearly demonstrates, however, is the fact that work output was recorded in the *dni* measure, which, due to the lack of any other terminology, suggests that the records concern the measuring of stone work and indeed the removal of stone (*hm^c*). In my opinion, this type of work is best and most easily measured in volume, i.e. by filling and counting containers of roughly similar proportions.

⁴¹¹ For example from the Valley of the Kings. Cf. Dorn (2011), 155 + Tafel 573-575 (O. 694 rto. l. 4).

⁴¹² The Belgian Mission working on TT 29 (Mission archéologique dans la Nécropole thébaine), a joint project of the University of Brussels and the University of Liège, is going to publish the documents. I would like to extend my thanks to Dr. Dimitri Laboury at the University of Liège for allowing me access to images of the documents.

⁴¹³ 910.96 m – this includes the burial chambers and passages of TT 95b and TT 95c in addition to the main chapel.

⁴¹⁴ 803.87 m³ – the combined volume of Senenmut's two tombs is 1023.83 m³, and as such is a somewhat larger funerary monument than TT 95.

⁴¹⁵ O. 291492 r. ls. 4+7 & vs. l. 3; O. 291239 vs. l. 4; O. 291437 vs. ls. 1+5; O. 291386 r. l. 7 & v. l. 3; O. 291436 r. l. 6 & v. l. 5; O. 291491 r. l. 8

This would entail removing the rock in manageable and probably smaller containers than the 144.7 litres of the envisioned cubic cubit, but transferring the rubble to bags or baskets outside the tomb, filling them to the brim in order to standardise the measure and for the scribe to count and record.

Archaeological evidence from the excavation of another Theban monument, albeit from the Middle Kingdom, supports the interpretation of filled containers standing in rows for the scribe to count and record. In 1921, Herbert Winlock and the Metropolitan Museum of Art Egyptian Expedition uncovered 50 baskets with stone chips standing in a number of rows outside the southern parapet wall of the court at Montuhotep II's mortuary temple in Deir el-Bahri (see image 11). These were left here between two building phases and not removed when work recommenced because they were too rotten and impossible to move, and were therefore covered and incorporated in the later building phases.⁴¹⁶



Image 11 – 50 baskets in four rows containing rubble and sand. The scale in the middle of the image in front of the baskets is 1 meter. From Arnold (1979), plate 36c.

The baskets were filled with chips (see image 12) and due to their condition not moved by the 'basket boys' as Dieter Arnold labelled them.⁴¹⁷ The reason for storing the baskets in lines is not completely clear, but with the image of a scribe recording the progression of the building process, the suggestion that the

⁴¹⁶ Arnold (1979), *The Temple of Mentuhotep at Deir el-Bahri*, 62.

⁴¹⁷ Arnold (1979), 62.

baskets were awaiting documentation is not impossible. If they had been counted and perhaps recorded, one would assume that they would have been emptied and reused elsewhere.



Image 12 - Close-up of baskets filled with limestone rubble and sand. From Arnold (1979), plate 36d.

The same excavation uncovered another two baskets (see image 13), this time empty and within the temple area proper.⁴¹⁸ While Arnold's that the baskets were used for carrying grain is not impossible, I rather view them as physical evidence for the *dni* measure. Whether called a basket or a bag, these two have the approximate dimensions of the cubic cubit, both exceeding the 52.5 cm of a royal cubit in length but not quite in width. Depending on the stretching capabilities of the material, which seems to be woven thread, it is plausible that they could contain 144.7 litres of either grain or stone chips. The scale used on image 11 also suggests a similar volumetric capacity for the baskets found standing in rows.

⁴¹⁸ Arnold (1979), 61 – here, he suggests the possible reasons for the deposition of the two baskets.



Image 13 - Two baskets found in the temple area of Montuhotep II in Deir el-Bahri. From Arnold (1979), plate 35c.

This means that these baskets were fairly large, possibly larger and heavier when filled than one man could carry. From other textual sources come indications of the use of such baskets precisely because they are large. In the 18th Dynasty funerary papyrus of Nebseni, which contains Spell 172 of the Book of the Dead, a passage reads: “*NN has breath, his nose has air. (He has) 1000 geese and 50 dni-baskets⁴¹⁹ of all good and pure things.*”⁴²⁰ From the context of the text it is clear that this refers to large baskets, i.e. a large volume of all good and pure things. The same is clear from a partial offering list of Amenhotep IV at Karnak, where four entries for products are defined in the *dni*, for example, incense: 2 *dni*, and fruit: 2 *dni*.⁴²¹ Here, the unit is without doubt a volumetric container, but it is unclear whether it is a basket or another form of vessel. Many other examples where the translation of the word *dni* to mean basket or vessel or similar is preferable can cited.⁴²²

⁴¹⁹ The online Thesaurus Linguae Aegyptiae (<http://aew.bbaw.de>) even goes so far as to translate this as “50 *Kubikellen*”.

⁴²⁰ Papyrus BM EA 9900 (Nebseni) (1), BD 172 (column 46).

⁴²¹ Saad, R. & Manniche, L. (1971), “A Unique Offering List of Amenophis IV Recently Found at Karnak”, JEA 57, pl. XXI.

⁴²² See for example: O. BM 29555; O. Gardiner 151; O. Gardiner 163; O. Gardiner 238 ; O. Gardiner 286; O. IFAO 1261; O. Michaelides 13; and O. Turin 57378.

As a counterpoint to the *dni* as a measure of volume is O. Ashmolean HO 183 (O. Gardiner 183)⁴²³ where the meaning seems to be that of the area of decoration on a coffin.⁴²⁴ Kathlyn Cooney bases this on the text on the recto side of the ostrakon, but the two mentions of *dni* are on the verso, which may be unrelated. Furthermore, the 28 and 72 *dni* in this text would describe a very large area when compared to the relatively low numbers in the Senenmut corpus (between ½ and 2 *dni* as daily entries),⁴²⁵ or the TT 29 corpus (between 15 and 45 *dni* as monthly entries).

The following documents, however, make it clear that when referring to the *dni*, the Egyptians were in fact using a capacity measure. Two documents describe the *dni* as being composed of three measurements of cubits (length) which multiplied result in a number followed by the *dni* as a unit. In O. Ashmolean HO 26 (l. 4), the numbers are 6 cubits by 2 cubits by 4 cubits which equals 48 *dni* (*mḥ 6 r mḥ 2 mḏwt mḥ 4 iri.n dni* 48).⁴²⁶ This is also found in P. Turin 1923 (l. 8) only with larger numbers: 15 cubits (length), 6 cubits (width), 7 cubits (height), which gives 630 (*dni*)⁴²⁷ (*mḥ 15 wsh n mḥ 6 hyt n mḥ 7 iri.n* 630). The same arrangement can be found several times in both P. Turin CGT 55002⁴²⁸ and P. Turin Cat. 1885.⁴²⁹

3.4.2 – Specialised tasks

The aim of this subchapter is to analyse the sequence of specific tasks performed by the workmen in TT 71. Not all the ostraca from the tomb record these stages of work and some stages are only mentioned once and not in relation to any other tasks. Based on the suggested relative chronology of the documents (see chapter 3.3, table 4 above), the following sequence of tasks correlates both with the textual and archaeological evidence:

⁴²³ Unpublished, Černý Notebook 45.85 and 107.16.

⁴²⁴ K. M. Cooney (2002), *The Value of Private Funerary Art in Ramesside Period Egypt*, 125.

⁴²⁵ Hayes translated *dni* as sections because of his translation of *dḳr* and *šꜥd*, which would require the unit of measurement to be an area and not a volume. See below on *dḳr* and *šꜥd*.

⁴²⁶ Černý cautions that the reading of the last 8 strokes in 48 is tentative (Černý (1973b), 20), but not only does it make sense mathematically, this would still illustrate the fact that the Egyptians thought of the *dni* as having three dimensions.

⁴²⁷ The unit is omitted in this line, but is used in line 6 in summing up a total of volumes, and it is clear that this is what is meant from the context.

⁴²⁸ Cf. Demichelis (2004), “Le projet initial de la tombe de Ramses IV ?”, ZÄS 131, 114-133.

⁴²⁹ A. H. Gardiner & H. Carter (1917), “The Tomb of Ramesses IV and the Turin Plan of a Royal Tomb”. In *JEA* 4, 130-158. See also, W. Pleyte & F. Rossi (1869-1876), *Papyrus de Turin* (Leiden; Brill), pls. LXXI-LXXII.

1. *ḥ33* - Cutting/excavating soil/rock.
2. *šꜥd* - To cut/trim – Follows the initial excavation.
3. *3ꜥꜥ* - Repairing or reconstructing of walls with flakes of stone set in mortar or plaster. Follows the *šꜥd*-stage.
4. *dḳr* - Rough smoothing/smoothing/outlining of features such as internal columns.
5. *w3ḥ ḏrīw* - Application of a hard surface on which to colour or apply paint, or laying background/ground colour.

Hayes explained the sequence of tasks, which from his point of view all related to stages of the decoration of the walls, as starting with *šꜥd*, then *3ꜥꜥ*, and finally *dḳr*.⁴³⁰ However, this does not follow the sequence in the work documents from TT 71 which is:⁴³¹

- O. 62: – *ḥ33.t* –
O. 63: – *dḳr* – *šꜥd* – *3ꜥꜥ* – *w3ḥ ḏrīw*
O. 64: – *dḳr* – *šꜥd* – *3ꜥꜥ* – *w3ḥ ḏrīw*
O. 65: – *3ꜥꜥ (grḥ)* – *f3īt ḳ3ḏ3 + mw* – *šꜥd* – *f3īt ḳ3ḏ3*
O. 66: – *w3ḥ ḏrīw* – *3ꜥꜥ* – ? – ?
O. 67: – *šꜥd* – *šꜥd*
O. 69: – *3ꜥꜥ*
O. 73: – *šꜥd*

It is only in O. 65 that Hayes' sequence can be seen and that is assuming that the scribe recorded the tasks in reverse order, perhaps as he encountered them going into the tomb. This opens up for a different interpretation of both the sequence and the translation of the terminology.

Betsy Bryan lists the following sequence of tasks in her article on painting:⁴³²

- 1) *3ꜥꜥ* – 2) *šꜥd* – 3) *w3ḥ ḏrīw* – 4) *dḳw (dḳr/dg3)* – 5) *ḏrīw* – 6) *sš*.

She concludes that the terminology all relates to the decoration of the tomb, with which I do not completely agree, because I interpret the tasks of *3ꜥꜥ*, *šꜥd*, and *dḳr* as relating to the excavation of the tomb as will be further discussed in the analysis of each term below. It is also not entirely clear where Bryan's fifth step in the sequence comes from, as the term *ḏrīw* only occurs with the term *w3ḥ*.

⁴³⁰ Hayes (1942), 39.

⁴³¹ I list the relevant ostraca according to Hayes' relative chronology.

⁴³² Bryan (2010), "Pharaonic Painting through the New Kingdom", 1004.

3.4.2.1 – *ḥ33.t*

The term *ḥ33.t* (or perhaps *ḥ3.t*) relates to cutting or excavating soil/rock. Its precise meaning is not well understood as it only occurs once in the Senenmut corpus and similar usage has so far not been identified in any other document or manuscript. I would argue that the reason for its absence is because no other surviving document records the beginning of excavation of a Theban tomb. *ḥ33.t* is translated by Hayes as “cut to measure”, which he suggests with some reservation is a “curious variant of the *tertiaie infirmae* verb *ḥ3y* ‘measure’”.⁴³³ As the ostrakon deals with work outside the tomb, he argues that a word similar to ‘cut’ or ‘excavate’ seems to be required in the summary line 5.⁴³⁴ I agree that the ostrakon seems to be dealing with excavation and that a translation along this meaning is preferable.

Defining and understanding the term, and the text passage in which the term occurs, is important because it has consequences for the socioeconomic interpretation whether the men recorded as doing the *ḥ33.t* are doing this work for one or two days, or there for the duration of the tomb building project. The *ḥ33.t* task is performed by no less than 30 men, which indicates a need for either speedy or voluminous results. The job at hand was probably relatively simple, as the men are not differentiated or defined further as specialists, unlike the 11 stonecutters (*ḥrty.w-nṯr*) in the preceding lines of the ostrakon. When compared to the rest of the work documents, the number 11 also seems unusually large. The commencement of TT 71 happened at an early time in the New Kingdom necropolis and it is conceivable that there was no set way, or tradition, for large constructing projects. One gets the impression that throughout the documents, there is an element of trial and error, and that the workmen, and especially the scribe through what he chose to record, were learning as the project progressed. This is also reflected in the use of both measures for length; the cubit and the *nḥi*.

As the term *ḥ33.t* is only found at the beginning of the tomb construction process, an interpretation as the simple task of removing loose stone or gravel seems possible. Assuming that all of the mentioned 30 men were working at the same time, the construction area must have been relatively large, possibly along a straight line of 20.3 meters (or 29 *nḥi*).⁴³⁵

I would suggest the following interpretation for both the term *ḥ33.t* and the text passage in O. 62 in which the term occurs: The 29 *nḥi* were measured out at the beginning of the project to define the extent of the façade of TT 71 (see image 14 for the suggested situation) and the 30 men are cutting or excavating a

⁴³³ Hannig’s dictionary does not list the exact rendering of the term found in O. 62, but a similar word is noted: *ḥ3j* - “messen (mit Längenmaß)”. Hannig (2006), 623.

⁴³⁴ Hayes (1942), 38.

⁴³⁵ A possible parallel is found in O. Cairo CG 25501, l. 5: “Total: 10 men. They did ... *nḥi*.” (*dmḏ s 10 ḥr(i).w nḥi [...]*). Both the numerical value that presumably followed the word for *nḥi* and much of the content of the ostrakon is unfortunately too damaged for a precise meaning or purpose to be ascertained.

groove that both defines the upper part of the portico and clears the rubble down to bedrock on either side of the line. I discussed this with Dr. Andrea Loprieno-Gnirs at the University of Basel in June of 2017, and she sees the same pattern of first defining the façade of the tomb in her work on TT 95, TT 84, and K90. Her argument is that the façade was meant to define the limit for the width of the internal tomb structures.⁴³⁶

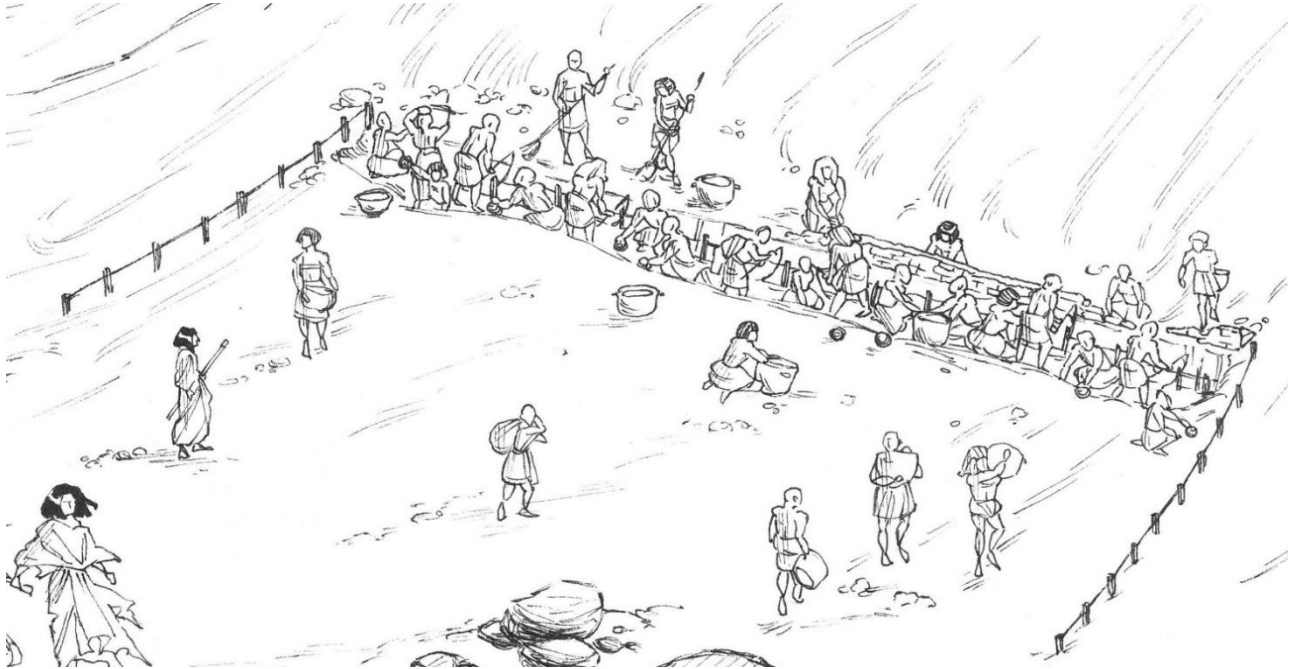


Image 14 – Artist’s reconstruction of the commencement of work on TT 71 - 30 men outlining the façade of the tomb by excavating a predefined groove or ditch (the task of *ḥ33.t*) and building the upper retaining wall of the portico. Illustration by Ida Christensen.

The existing façade of TT 71 is wider than 29 *nbi*, but this is possibly due to the poor quality of rock it was excavated in, resulting in a wider than intended façade and courtyard. This also offers a possible explanation for the remains of the original bedrock in the northern end of the courtyard⁴³⁷ (see fig. 7 and image 4 above): When the façade was extended in the southern end and a fourth window was added, the northern end was, perhaps too hastily, extended for reasons of symmetry. The niche carving clearly visible between windows 1 and 2, and 2 and 3, is completely missing between windows 3 and 4 (see image 15), further suggesting that this was not part of the original design, or that the workers never finished that part of the façade. When the outline of the façade was done, the 30 men possibly continued excavating the courtyard while the stonecutters proceeded to excavate the interior spaces.

⁴³⁶ TT 71 does not conform to this, as the transverse hall is slightly wider than the façade in both the southern and northern ends, but this can possibly be explained by the rock quality and the accidental removal of too much rock at either end.

⁴³⁷ Dorman has no explanation for this feature. Dorman (1991), 25.



Image 15 – The remaining façade of TT 71 on the southern side of the entrance. Notice the carved stone between window 1 on the right (mostly destroyed when the roof of the transverse hall collapsed) and window 3. This stonework is missing between window 3 and 4 possibly due to an expansion of the façade and/or the courtyard. Photograph by Heidi Kontkanen, 2011.

3.4.2.2 - *šꜥd*

šꜥd basically means “to cut”⁴³⁸ but can in the context of tomb construction be translated as “to trim”. It refers to the straightening of the walls and ceiling after the initial excavation. That *šꜥd* is not the initial excavation or cutting of the virgin rock is clear because it is always recorded as having produced fewer *dni* than both *dkꜣr* and *šꜥꜥ* (see below), which means that it was slower process or required more precision and concentration. As one of the technical terms for the construction process of the tomb of Senenmut, the concept of *šꜥd* is a small but important step in determining the timeframe for the project. Understanding its precise meaning is therefore crucial for understanding the tomb building process.

⁴³⁸ See, for example, P. Westcar (P. Berlin 3033, lines 10 and 11.), P. Berlin 10463 (lines 4-7 recto), O. Varille 26 (recto l. 5), or O. DeM 1213 (line 4). It also occurs in biographical text of Amenemheb called Mahu in his tomb, TT 85: “I was the one who cut off his hand” (*ink šꜥd dꜣrt=f*) - Urk. IV, 894. It also occurs in the Saqqara Dossier, for example on the verso of P. MMA+V Text B lines 2 and 4.

The meaning of the word is fairly well established and usually relates to cutting by means of a tool made of metal.⁴³⁹ This is made clear by the use of the knife determinative in all the examples from the Senenmut ostraca,⁴⁴⁰ which Hayes translates as ‘cut’ or ‘trim’. He envisions an edged tool used in an operation of truing the wall surfaces after the initial excavation.⁴⁴¹ Hayes interprets the *šꜥd*-procedure as being followed by the *ꜥꜥ*- and *dkꜥr*-procedures, with which I agree, albeit for different reasons (see 3.4.2.3 and 3.4.2.4 below). In another ostrakon (O.86, l. 8), Hayes translates the word as “sawyers (of wood)”,⁴⁴² which seems appropriate as the document is a list of people with various professions.⁴⁴³

Betsy Bryan describes the term *šꜥd* as a process involving “*Fine plaster followed by trimming to cut the damp plasters with a sharp edge for a smoothed surface.*”⁴⁴⁴ However, she does not offer an explanation of the fact that *šꜥd* was measured in *dni*, albeit always in lower amounts than the process of *ꜥꜥ*.⁴⁴⁵ As plaster (*kꜥw*) in the Senenmut corpus was delivered in *menet*-jars, it seems reasonable to assume that the scribe would have measured the production of plaster in those jars with an as of yet unspecified capacity.⁴⁴⁶ The same issue concerning plaster can be observed in the TT 29 corpus where the term *šꜥd* does not occur.

3.4.2.3 - *ꜥꜥ*

ꜥꜥ is the term used for the repairing, shoring, smoothing, or patching of cavities in the rock surface using limestone flakes set in a pinkish mortar or plaster.

Most occurrences of the term are translated in a way that relates to the process of plastering or repairing.⁴⁴⁷ In his review of the *Wörterbuch der Aegyptischen Sprache*, Gardiner refers to “*a hieratic ostrakon (Twentieth Dynasty) acquired for the Ashmolean Museum*” in which he translates *ꜥꜥ* as “to patch up”.⁴⁴⁸ Betsy Bryan refers to the procedure as a “*Plastering to fill in wall gaps, hide rock deficiencies, and*

⁴³⁹ See for example the translations of: Gardiner (1957), 594: “to cut off/up/down”. Erman & Grapow (1971), IV, 422: “schneiden”. Lesko (1987), 138: “to cut”. Hannig (2006), 874: “schneiden, abschneiden, fällen, zurechtschneiden, zerschneiden”. Haring (2014), “Workmen’s Marks and the Early History of the Theban Royal Necropolis”, 92.

⁴⁴⁰ O.63 l. 4, O.64 l. 5, O.65 l. 2, and O.73 l. 7.

⁴⁴¹ Hayes (1942), 39.

⁴⁴² Hayes (1942), 24.

⁴⁴³ Compare this, e.g., with the usage in the Second Kamose Stela (Luxor Museum J.43) line 12: “I will cut/chop down your trees/orchards” (*šꜥd=j mnw=k*).

⁴⁴⁴ Bryan (2010), 1004.

⁴⁴⁵ Cf. O.63 to O.65.

⁴⁴⁶ For the size and capacity of the *mnt*-jars there is as of yet no set value. Cf. Hayes (1942), 35; Janssen (1975a), 330; B. Kemp (1979), “Reviewed Work: Commodity Prices from the Ramessid Period”, 183; J. D. Bourriau, P. T. Nicholson & P. J. Rose (2000) “Pottery”, 140; and M. Müller (2014), “Es werde Licht? Eine kurze Geschichte von Öl & Fett in Deir el-Medina in der 20. Dynastie”, 180.

⁴⁴⁷ See for example the translations of: Erman & Grapow (1971), I, 2 (13): “Ausdruck für ‘bauen’”; Lesko (1982), 2: “to coat (with plaster), to smooth, to patch”; by Hannig (2006), 2: as “bestreichen, glätten”.

⁴⁴⁸ Gardiner (1948), JEA 34, 18.

create a surface for decoration.”⁴⁴⁹ While this interpretation seems likely, the problem is that when it occurs in the Senenmut corpus,⁴⁵⁰ the \mathfrak{z}^{cc} -task is not measured in, for example, the *menet*-jars in which normal plaster (*kḏw*) was brought to the construction site.⁴⁵¹ This would have been an easy way for the scribe to record the quantity, but \mathfrak{z}^{cc} was primarily measured in *dni*: O. 65 - 5 *dni*: O.66 - 12 *dni*: and in O. 69 - 1 *dni*. The last document records another measure of 6 cubits immediately after the mention of *dni*. This could be unrelated, but in O. 63 and O. 64, the \mathfrak{z}^{cc} -task is followed by the word cubit (*mḥ*), although without a numerical value. In fact, the space immediately after the word \mathfrak{z}^{cc} in both documents is left blank, giving the impression that the scribe was unsure how to record the result.⁴⁵²

The present appearance of TT 71 reveals that the walls and ceiling had been heavily patched and reconstructed in many places using limestone flakes set in a coarse pinkish mortar or plaster.⁴⁵³ This was then in certain places covered by a layer of the same kind of plaster without the inclusion of limestone flakes,⁴⁵⁴ and then, a finer plaster of lime or gypsum was applied as a basis for the painted decoration (see image 16).⁴⁵⁵ I argue that the application of the mortar with limestone flakes represents the \mathfrak{z}^{cc} -procedure, but it is possible that this also included the application of the finer layers of plaster.

⁴⁴⁹ Bryan (2010), 1004.

⁴⁵⁰ O.63 recto l. 5; O. 65l. 2; O. 66 l. 6; and O. 69 l. 3. It arguably also occurs on O. 64 recto l. 5, but the passage is too damaged to say for certain.

⁴⁵¹ A jar with mortar residue found inside the burial chamber of Djehuty (TT 11) which might be considered a *menet*-jar. Cf. J. Galan (2014), “The Inscribed Burial Chamber of Djehuty (TT 11)”, 255.

⁴⁵² See 3.6.4 below for an interpretation of the sequence in the construction process and reasons behind it.

⁴⁵³ Dorman (1991), 26.

⁴⁵⁴ Cf. MacKay (1921), 159-160, on the description of *Mud-plaster*, which is similar to the plaster used in TT 71.

⁴⁵⁵ For similar techniques of plastering in TT 81 cf. Dziobek, Eberhard (1992), *Das Grab des Ineni, Theben Nr. 81*, Archäologische Veröffentlichungen 68 (Mainz am Rhein: Philipp von Zabern), 22-23, and in TT 99 see N. Strudwick (2016), *The Tomb of Pharaoh’s Chancellor Senneferi at Thebes (TT99)*, 61-62, fig. 51-53.



Image 16 – Western wall of the northern end of transverse hall. Stages of \mathfrak{z}^{cc} . (1) Natural rock. (2) Primary stage of \mathfrak{z}^{cc} (coarse plaster with heavy inclusions of limestone flakes). (3) Secondary stage of \mathfrak{z}^{cc} (coarse plaster). (4) Fine gypsum plaster with coloured decoration. Photograph by Heidi Kontkanen, 2011.

In the textual material, it is the workman Sennefer who in each instance performs the procedure. He is in O. 65 called the ‘reinforcer’ (*skn*) and in O. 69 the ‘shorer’ (*twzw*), both titles suggesting an aspect of building in contrast, for example, to a stonecutter who removes material. This building aspect provides an important clue to the measuring of \mathfrak{z}^{cc} in *dni*, which may not have been removed from the tomb, but rather brought back in and added to the walls and ceiling along with the plaster. Whether the *dni*-baskets were simply being hauled inside again or whether the *hm*-crew had to unload them into smaller containers is not clear, but we can observe a similar situation in the TT 29 ostraca. On the verso of O. 291437, the \mathfrak{z}^{cc} is mentioned alongside the terms *dni*, *hm*, plaster (*kdw*), and *menet*-jars. It also mentions the working on pillars, which would seem to refer to the 12 pillars of the first hallway of TT 95, which have been constructed in similar quality rock as TT 71. The same construction techniques would therefore presumably have been used and the documentation of the same terminology confirms this.

I argue that the recording of a *dni* -measure in connection with the \mathfrak{z}^{cc} -procedure points to the limestone flakes already removed by the initial excavation, having been counted outside the tomb, being brought back inside to be used in the rough plaster reparation of the walls and ceiling. The cubit measure

mentioned on O. 63 and O. 69 refers, as I see it, to the length of wall the ‘shorer’ Sennefer has been reinforcing.

3.4.2.4 - *dkr*

The term *dkr* refers to a rough or ‘normal’ smoothing or outlining of features depending on the stone and place. It is very likely related to the verbs *dk* that means “grind” and *dgz* which relates to stone work or building in stone. As with the two previous technical terms, understanding the precise meaning of *dkr* is similarly fundamental in understanding the process it took to build the tomb.

According to Hayes, *dkr* is “*apparently an old form of dgz*”, and he therefore suggests translations of the term as “to face”, “to coat”, “to overlay”, and “to cover”.⁴⁵⁶ He argues that “*the fact that on the versos of both the ostraka on which this word occurs the principal activity recorded is the fetching of plaster and water suggests that dkr describes specifically the plastering of the walls of the tomb*”.⁴⁵⁷ Others are of the same opinion, perhaps drawing on Hayes’ statement, and Rainer Hannig translates *dkr* as “*überziehen (Grabwand mit Verputz)*”.⁴⁵⁸ Betsy Bryan is also of the opinion that *dkr* (*dkw/dgz*) has to do with plastering of tomb walls and writes that the term is “*Background painting with a blue or white frit mixture with emphasized adhesive qualities to cover any visual inconsistencies. Also means ‘whitewash’*”.⁴⁵⁹

I do not agree that *dkr* has to do with plastering and rather see the mention of plaster (*kdw*) on the verso side of O.63 and O.64 as unrelated to the technical aspect of the term here. Furthermore, the plaster is delivered in quantities of the undefined *menet*-jar, which one would expect the *dkr* to be measured in as well if it involved plastering. I do agree that the *dgz* is most likely the same as, or at least closely related to, *dkr*, because both terms can be measured in *dni* (see below), i.e., a work process that one way or another produces volume. According to Adolf Erman and Hermann Grapow, *dgz* is used as an “*Ausdruck bei der Mauerarbeit*” and has to do with stone-laying, the establishment of columns, or vault building.⁴⁶⁰ Leonard Lesko’s suggestion for a translation of *dgz* is “to plate, to cover, to erect”⁴⁶¹ which encompasses both the plastering aspect as well as the stone working/building aspect. His suggestion for the word *dk* is “to hack

⁴⁵⁶ Hayes (1942), 41.

⁴⁵⁷ *Ibid.*

⁴⁵⁸ Hannig (2006), 1061.

⁴⁵⁹ Bryan (2010), 1004.

⁴⁶⁰ Erman & Grapow (1971), V, 499 (7+8+9).

⁴⁶¹ Lesko (1989), 143.

up”⁴⁶², which is complemented by Gardiner’s “to press (?), move, expel”⁴⁶³, and even Hannig’s “to grind” (*mahlen*) or “to crush” (*zerkleinern*).⁴⁶⁴

The term *dkr* only occurs twice in the Senenmut ostraca: in O. 63 and O. 64 (the two texts document the same activities on the same day). Here, it is measured in *dni*, suggesting that it is a process that produces relatively large quantities of rubble. The stonecutter Teti is in both texts recorded as having done 2 *dni*, which is the equivalent of 289.4 litres or about 750-810 kilos depending on the density of the limestone and the packing of the *dni* basket.⁴⁶⁵

The term *dkr* also occurs once in the TT 29 corpus,⁴⁶⁶ relating to work being done on columns: *Those who are outlining/smoothing the columns* (*nty hr dkr hr n3 n iwn.w*). This fits well with the translation given by Erman and Grapow, although the document is not explicit as to what was being done. In O. Ashmolean 7 the term *dg3* is used no less than 10 times (5 on each side).⁴⁶⁷ In each entry, the same phrase is used: “Those who are *dg3*-ing” (*nty hr dg3*), which is followed by a measured result in either *dni* or in a number of stone blocks. It is not entirely clear what the document is describing, but the main point of importance for the present discussion is that the *dg3* is here measured in terms of volume, like the *3^c*, not in the *menet*-jars used for bringing plaster as could have been expected, but in *dni* and stone blocks.⁴⁶⁸

3.4.2.5 - *w3h driw*

The meaning of both words *w3h* and *driw* in combination is not easy to establish, as they currently do not appear together outside the ostraca from TT 71. While I argue for an interpretation of ‘laying a hard surface on which to colour or apply paint’ or ‘laying background/ground colour’, the meaning of each individual word is better attested and much better understood.

w3h means to place or lay,⁴⁶⁹ and is used in a variety of textual sources, for example P. BM EA 10102,⁴⁷⁰ P. Cairo 24095 (P. Maiherperi),⁴⁷¹ or in an inscription in the tomb of Ay in Amarna.⁴⁷² It is also found in one of

⁴⁶² Lesko (1989), 143.

⁴⁶³ Gardiner (1957), 603.

⁴⁶⁴ Hannig (2006), 1061.

⁴⁶⁵ Limestone weighs approximately 2.6 - 2.8 gram per millilitre. Cf. O. V. Rasmussen (2003), *Kemiske og Fysiske Tabeller*, 56.

⁴⁶⁶ O. 291492, recto line 3.

⁴⁶⁷ Lines 1, 3, 6, 10, and 11 on the recto, and lines 4, 5, 6, 7, and 9 on the verso.

⁴⁶⁸ The same occurs in O. Berlin P. 10621, O. Leipzig 13, and possibly O. Ashmolean 42, although the term used here is *dk3* and seems to concern preparing a roof (recto line 3).

⁴⁶⁹ See for example the translations of: Gardiner (1957), 559: “place, put down”. Faulkner (1962), 53: “set down, stow, leave aside”. Erman & Grapow (1971), I, 253: “legen, auflegen”; Lesko (1982), 101: “to put, place, lay down, to store”.

⁴⁷⁰ Line 7 - in the meaning “attached” or “fixed (in place)”.

⁴⁷¹ Book of the Dead Spell 125, line 396 - in the sense “to place” or “to lay”.

the ostraca from Deir el-Bahri which Hayes published in 1960. In MMA Field no 23001.108, the text passage reads: *Regnal year 49, month 1 of Peret, day 23: inspecting the work of the stonecutters during the laying of the corridor [...]* ((1) *rn.p.t -sp 49 3bd 1 pr.t sw 23 šp b3k.w n* (2) *n3 n hrty.w-ntr hft w3h t3 šm.y.t [...]*).⁴⁷³

driw or *dryw* means colour, colour pigment, or paint,⁴⁷⁴ and is also found in a wide variety of texts and genres, for example O. Toronto A11,⁴⁷⁵ P. Turin 1879,⁴⁷⁶ or P. BM EA 9994.⁴⁷⁷ Notably, Hayes also described the word as meaning colour or pigment, and when used in the ostraca from TT 71 referring to the “grayish blue ground color with which the walls of the tomb were covered prior to the drawing and painting of the scenes and inscriptions”.⁴⁷⁸ In a similar way, but with an admittedly slightly different meaning, the term is used on the stela of Amenyseneb: “the draughtsmen filling with colour” (*sš-ḳd.wt hr mh m drwy*).⁴⁷⁹

With regard to the combined meaning of *w3h driw*, Betsy Bryan described the inherent task as the “laying out of preliminary sketches for scenes with *t3-ryt*, “red ochre”. Done by draftsmen, i.e., scribes, not by tomb artisans.”⁴⁸⁰ There are some problems with this interpretation. Firstly, there is the reference to the word *ryt*,⁴⁸¹ which of course could be red ochre or red colour if further specified as such (*ryt dšrt*), but which is not mentioned in the Senenmut corpus. The word used in the texts is *trit*,⁴⁸² translated by Hayes as something akin to “cake” or “lump”, “evidently as a measure of the pigment (*dry.w*) with which the walls of the tomb were painted”.⁴⁸³ Secondly, while the term does entail a certain sense of ‘laying of colour’ I do not agree that it refers to the preliminary sketches for scenes,⁴⁸⁴ but rather agree with Hayes in his interpretation of laying the background or ground colour.⁴⁸⁵ This would, in my opinion, mean the final layer of fine white or bluish gypsum that forms a hardened background for the decorations. Whether or not these layers were considered by the workmen to be part of the task of *šꜥ* is uncertain (see subchapter 3.4.2.3 above).

⁴⁷² Amarna Tomb 25 (Entrance, Westwall), Great Hymn to the Aten (line 13) - in the meaning “to lay down” or “cease”.

⁴⁷³ Hayes (1960), pl. XIII, 21 recto, lines 1-2.

⁴⁷⁴ See for example the translations of: Gardiner (1957), 604: “colour”. Faulkner (1962), 324: “paint”; Erman & Grapow (1971), V, 601: “farbige Substanzen, Farbe”. Lesko (1989), 164: “back/rind (for *drww*)”. Hannig (2006), 1087: “Pigment, Farbe, farbige Substanz”.

⁴⁷⁵ Line 5 - in the meaning “colour”. Cf. Gardiner *et al.* (1913), 16a-16°. KRI III, 40-44.

⁴⁷⁶ Verso I. 1:6 - here meaning “colour”. Cf. KRI VI, 335-337.

⁴⁷⁷ Verso I. 12,3 - in the sense “colour”. Cf. Gardiner (1937), LEM, 110, 16.

⁴⁷⁸ Hayes (1942), 41.

⁴⁷⁹ Stela Louvre C12, l. 8. Cf. Sethe (1927), Lesestücke, 76, l. 10.

⁴⁸⁰ Bryan (2010), 1004.

⁴⁸¹ See for example the translations of: Erman & Grapow (1971), II, 399: “Farbe zum Schreiben und Zeichnen, Tinte”. Lesko (1984), 55: “paint, ink”. Hannig (2006), 489: “Farbe (zum Schreiben u. Zeichnen), Tinte / Tusche; Farbstoff”.

⁴⁸² Hannig (2006), 1007: “Farbklumpen”.

⁴⁸³ Hayes (1942), 40.

⁴⁸⁴ See for example P. Turin Cat. 1885, where the phrase “being filled with colours” (*mh.tw m drw.w*) is used in the description of the fourth hallway in the tomb of Ramesses IV which had been outlined in sketches (*sš.tw m ḳd.w*). Carter & Gardiner (1917), 134. Černý (1973b), 35.

⁴⁸⁵ Hayes (1942), 41.

3.5 - Organisation of people and institutions involved in the tomb building

In this part of the case study, the focus will be shifted to the different institutions that supplied either the resources or the workforce which are referenced in the textual material. This section will, however, begin with an analysis of the titles and tasks of the personnel, some of whom are named, in order to shed light on the organisation and administration of the tomb building project of Senenmut as well as determining, if possible, the approximate size of the work crew and the number of people involved.

The number of workers involved in the tomb building project of Senenmut is important to ascertain because it will have influenced both the timeframe and the overall cost. However, there is no record of any workers, skilled craftsmen or unskilled labourers being paid directly by Senenmut. Whether this means that these men received their salary or rations from the various institutions, which somehow were obliged to assist with manpower for the tomb construction project, is debatable. The institutions, however, contributed to other building projects in the area, from which workmen could have been diverted to the Qurna hill.

The unnamed labourers working on TT 71 and recorded in the ostraca vary in number from 2-3 men to around 60. Two ostraca from the corpus do record much higher numbers. In O. 90, the possible recording of 150 workmen⁴⁸⁶ and O. 131 reveals a total of 790 men.⁴⁸⁷ However, the latter were not working on the tomb, but the document possibly refers instead to a mining expedition.⁴⁸⁸ The fact that the ostrakon was found in the vicinity of the tomb does suggest that the scribe was somehow involved in both endeavours, perhaps on a par with Buqentuf who seem to have been in charge of other activities than the tomb building project of general Mai (see chapter 2.3.1). It also hints at the quantity of manpower that Senenmut had at his disposal,⁴⁸⁹ and being partly responsible for the construction of the Djoser-Djeseru in Deir el-Bahri would have allowed him to organise the work crews, or have delegated that task to one or more scribes and/or foremen.

The ostraca from Deir el-Bahri reveal a much higher concentration of workmen, both skilled and unskilled, and numbers in the individual documents are generally higher than those from TT 71.⁴⁹⁰ This is, of course,

⁴⁸⁶ O. 90 – the document records three possible groups of men (90 + 60 + a now lost number).

⁴⁸⁷ Line 2 of O. 131 specifically mentions 300 men. The total of 790 was supplied by 5-6 persons and/or offices.

⁴⁸⁸ Hayes (1942), 26.

⁴⁸⁹ He is most likely mentioned directly in the document as the 'Steward of the King's wife' (*imy-r pr hmt-nsw*), i.e. steward of Hatshepsut, and as such contributed to the quarrying mission with 200 men (l. 3).

⁴⁹⁰ MMA Field no. 23001.48 (**21** persons); MMA Field no. 23001.39 (**228** men); MMA Field no. 27057.2: (**12** men, **16** 'servants', **10** men, and **2** women); MMA Field no. 23001.66 (**15** masons); MMA Field no. 23001.51 (**30** masons (possibly 40), **80** labourers (60 *h3rw* and 20 *rmꜥ*)); MMA Field no. 23001.176 (**5** masons); MMA Field no. 23001.108 (Two lists which may in some way overlap: **19** men (recto) and **28** men (verso)).

due to the larger projects commissioned on royal initiative. Because the construction project was much larger at the royal building site, it is worth noting that many of the named workers at Deir el-Bahri had foreign names whereas those working on TT 71 are mostly Egyptian. The clear impression of the named workers at TT 71 is that these were skilled craftsmen performing specific tasks, and this may be also the case for the named workers at Deir el-Bahri.

3.5.1 - Titles, functions, and names of the personnel

The title most commonly used to describe people in the Senenmut corpus is that of *hrtyw* *-(ntr)*,⁴⁹¹ most likely in the meaning of ‘stone cutter’ or ‘mason’, but possibly also in the meaning of the less specific ‘necropolis worker’.⁴⁹² Hayes notes that the word is clearly used as “*the designation of a special class of skilled craftsmen, trained in the working (especially the cutting) of stone*”.⁴⁹³ While I to a large extent agree with this and one would expect specialized training for masons, it should be pointed out that it is not specified what type of work is being done by the *hrtyw* in the ostraca.

There are only three named people bearing the title *hrtyw*; Teti,⁴⁹⁴ Hepyhersaef,⁴⁹⁵ and Beshau.⁴⁹⁶ A fourth named person, Kay,⁴⁹⁷ may have been a stone cutter, as the result of his work is measured in cubic cubits, which is also the case for the other three masons. In the text that mentions Kay, his work output is recorded to be no less than 28 cubic cubits, which is not referred to as *dni*. This seems a very high result for one person when compared to the daily results of the other stone cutters, which is between ½ and 2 *dni*. It is therefore likely that the result is a monthly measurement. Alternatively, it is the work of a team under the authority of Kay, but if this was the case, one would expect a designation of rank to have been written for Kay.

⁴⁹¹ In the ostraca from TT 71 the *ntr* -part only occurs in O. 62, referring to 11 unnamed workers, whereas both parts of the word are consistently written out in the ostraca from Deir el-Bahri, also for named persons. See for example Hayes (1960), Pl. IX - O. 4 (MMA Field no. 23001.48.) recto l. 5 + verso l. 4.

⁴⁹² See for example the translations of: Gardiner (1957), 587: “necropolis-worker”. Faulkner (1962), 204: “stone-mason”. Erman & Grapow (1971), III, 394: “Nekropolenarbeiter, Steinmetz”. Lesko (1984), 211: “quarryman, stonemason”. Hannig (2006), 694: “Steinbrecher, Nekropolenarbeiter, Steinbrucharbeiter”.

⁴⁹³ Hayes (1942), 38.

⁴⁹⁴ Mentioned in 8 ostraca; O. 63-68, O. 74 and O. 91. The name is relatively well attested – Cf. Ranke (1935), 384, 4.

⁴⁹⁵ Mentioned in 3 ostraca; O. 63, O. 64, and O. 69. The name is not attested elsewhere.

⁴⁹⁶ Mentioned in 7 ostraca; O. 63-65, O. 69, and O. 73-75. The name is attested on a possible New Kingdom stele from the Memphis area, now in the Rijksmuseum van Oudheden, Leiden. Cf. Ranke (1935), 98, 22.

⁴⁹⁷ Mentioned in 1 ostrakon; O. 76. The name in the form found on this ostrakon is not often attested. Cf. Ranke (1935), 341, 19.

Teti⁴⁹⁸ is recorded doing two specific tasks within the tomb of Senenmut: the '*dkr*' once with a result of two *dni* (O. 63 and O. 64, which records the same events – see above 3.4.2.4) and the '*šꜥd*' twice with a result of two *dni* in O. 65 and with an unknown result in O. 67. He is also recorded as having done 'four cubits in the southern side' in O. 74, which presumably refers to a one-dimensional measurement, but the precise task is not specified. I suggest that he was working in the transverse hall excavating or cutting the space between the columns and the western or eastern walls, which matches a distance of 4 cubits (2.1 meters). Teti is also mentioned as receiving 50 loaves and one '*snw*'-jar in O. 91, which is the only attestation of the stone cutters receiving payment for their services.⁴⁹⁹

Hepyhersaef is recorded performing *šꜥd* in O. 63 (and O. 64) with the result of ½ *dni*. In O. 69, his name is mentioned immediately followed by the word '*dn*', which most likely should be read *dni*,⁵⁰⁰ but no number for the result and no specified task is recorded. As both Beshau and Sennefer are recorded as having done one *dni* each in the same text, it is within reason to assume that Hepyhersaef achieved a similar result.

Beshau was recorded having done an unknown result (*dni*) while performing the task of *šꜥd* in O. 73 and having done 1 *dni* as a result of an unspecified task in both O.66 and O. 69. He is noted as having begun work in the 'northern passage', which is said to be in hard rock, possibly flint nodules, but for which no result is recorded (O. 74).⁵⁰¹ This may be because the rock was harder than expected and no resulting *dni* baskets were produced that day.

Beshau was also recorded performing different tasks than the other stone cutters, for example the gathering or the bringing of (wooden) boards in O. 63, further specified in O.64 as two boards and two poles of acacia wood, and which for some reason delayed him. It is not stated why Beshau was delayed, but the scribe made sure to note this fact in both documents. The boards and poles were possibly meant for a scaffold within the tomb, similar to the image found on ostrakon KV 18/6.872,⁵⁰² enabling the workmen to reach the upper parts of the walls and ceiling after the rock had been fully removed. Beshau is also recorded as part of a group of people delivering 5 jars of plaster. Beshau delivered 2 jars, a man named Ihay and three unnamed men delivered another 3 jars of plaster. The distribution of these five jars between the five men is not made explicit, but it seems as if Beshau was carrying two on his own, marking him as a strong man, while Ihay simply supervised 'his' three men carrying three jars. Beshau is finally mentioned as having been put to work in O. 75 by someone, presumably the scribe of the document. The exact meaning

⁴⁹⁸ The name also occurs on O. 87 where it is preceded by the title 'follower' (*šms*), which most likely means that it is a different person.

⁴⁹⁹ There is the alternative explanation that this is the follower (*šms.w*) Teti mentioned in O. 87, who is presumably not the same as the stone cutter.

⁵⁰⁰ See Hayes (1942), 22.

⁵⁰¹ Hayes (1942), 37-38.

⁵⁰² Dorn (2011), 236 (53), Tafel 60-61.

of this is not clear as it would seem to indicate a hierarchy in which Beshau was on a lower level. The location of his assignment was in a doorway (*pꜣ wmt*) of the tomb, the work output recorded in both cubit (3 in depth) and *nbi*-rods (3 in width and 7 in height). These measurements do not fit any part of TT 71, perhaps because the dimensions were altered at a later stage.

Sennefer⁵⁰³ is recorded on O. 63 and O. 69 as performing the task *ꜣꜣ* (see above 3.4.2.3), which he was arguably also doing in the damaged texts of O. 64, O. 65, and O.66. He was probably a highly specialised craftsman doing only one type of job. He is, however, labelled both with the title *skn*⁵⁰⁴ and *twꜣw*,⁵⁰⁵ which possibly indicates variations in what the task *ꜣꜣ* entailed. However, as both designations were used only once in the Senenmut corpus, it is very difficult to ascertain their precise meaning, let alone determine the exact place in the tomb where Sennefer would have been performing the respective tasks. However, taking into consideration the sheer amount of limestone chips set in mortar currently visible in TT 71 and the large retaining walls of the courtyard (which required an equal level of specialised knowledge to construct – see image 17), the function that Sennefer performed would have been of vital importance to the project. This is perhaps reflected in O. 65, where the result of Sennefer’s work is no less than five *dni*, which is more than twice as much as the other named craftsmen. Whether this is because the *dni* was measured as being removed or put back into the tomb, or if Sennefer’s result is reflecting a team effort, is more difficult to ascertain.

⁵⁰³ Cf. Ranke (1935), 309, 5.

⁵⁰⁴ Hayes ((1942), 39) describes the *skn* as “to revet, brace, shore up, and otherwise consolidate weak portions of the excavated interior of the tomb and of its façade”. For further examples see the translations of: Erman & Grapow (1971), IV, 306: “stark machen”. Hannig (2006), 836: “stärken, Verstärker, Konsolidierer (der die Grabwände ausbaut und festigt)”.

⁵⁰⁵ Hayes translates as “shorer” in the meaning to prop (up), stay, shore up, support, etc. Hayes (1942), 40. See also: Hannig (2006), 990: “Abstützer (Beruf od. Tätigkeit eines Arbeiters im Grab)”.



Image 17 - The northern retaining wall of the artificially constructed courtyard of TT 71. Notice the thickness at the base indicated with arrows. Photograph by Hanne Siegmeier, 2011.

The work records only mention four scribes and they appear in two pairs. The first pair is Imhotep⁵⁰⁶ and Amunnu,⁵⁰⁷ who both seem to be doing part of the decoration of the tomb. Imhotep is recorded as “laying the background or ground colour” (*w3ḥ dṛiw*), the result of which was the use of 20 cakes (*trṯt*) of colour; the work is then further denoted as being completed (*grḥ*). Amunnu is not described as having performed this task, but has the same result of 20 cakes written after his name, but not noted as completed. Whether the author of the document assumed this to be implicit is difficult to determine. The second pair of scribes, Nebamun and User,⁵⁰⁸ is recorded as performing administrative work. Nebamun received the “work of the tomb” (*šsp b3kw n p3 is*) from User in the sense that he would take over supervision of the project, at least temporarily “until day 28” (*r hrw 28*). The author of the Senenmut ostraca corpus could thus have been one or possibly both of these scribes. Unfortunately, their names are very common, making a positive identification of either scribe difficult.

As previously mentioned, some workers were assigned the task of bringing supplies to the construction site. Except for Beshau, who was consistently labelled as a stone mason, only one other man performing the task is named: Ihay,⁵⁰⁹ who is recorded bringing plaster (*kḏw*) along with 3 unnamed men. The supply of plaster for the repair and smoothing of the wall surfaces must have been quite extensive, most likely with daily deliveries. Unfortunately, only two other ostraca record the supplying of plaster in the Senenmut

⁵⁰⁶ O. 63 and O.64. Cf. Ranke (1935), 9, 2.

⁵⁰⁷ O. 63 and O. 64

⁵⁰⁸ Both Nebamun and User are only mentioned in 1 ostrakon; O. 70.

⁵⁰⁹ Mentioned in 1 ostrakon; O. 65.

corpus: O. 63 and O. 64, which as mentioned refer to the same activities on day 25 of the fourth month of Peret. In the text, two men, in O. 63 designated as Nubians (*nḥsy*),⁵¹⁰ brought three *menet*-jars of plaster and three *menet*-jars of water, possibly to be mixed on site before being applied to the surface of the tomb. Alternatively, the water could have been for drinking.

The 3rd task described above (see 3.4.2.3) possibly involved all the various stages of repairing, plastering, and finishing the walls with a finer layer of gypsum. Calculating the quantities of material used in TT 71 or other tombs would reveal an interesting economic aspect of the construction project; this could potentially be done by analysing and generalising deliveries of plaster in *menet*-jars if these had been more regularly recorded than in the Senenmut ostraca. However, and as mentioned earlier (see 3.4.2.2), the precise size and capacity of the *menet*-jar has yet to be determined with any precision, but it potentially holds a key aspect in calculating the precise quantities of plaster applied in the Theban tombs. Due to this problem, another approach will be followed. By measuring the surface area in a tomb and determining the average thickness of plaster required to produce an even and smooth surface, the total weight and quantity of plaster can be calculated, the result of which reveals aspects of the logistics involved in the building process.

For example, assuming an average plaster layer of 1 cm for the wall surfaces, with a plaster density equal to water, i.e. 1 gram per cm³, the following calculation for a minimum quantity is made: 402.43 m² x 10 kg/m² = 4024.3 kg.⁵¹¹ If the density of the plaster is set to be equal to that of gypsum at 2.3 grams per millilitre⁵¹² the result is 9255.89 kg. Assuming that the average layer of plaster in TT 71 is more than 1 cm thick⁵¹³ the above number would have to be adjusted accordingly. For the tomb of Ineni (TT 81), which is located close to TT 71, albeit on a lower level and further to the south, Eberhard Dzierbek calculated that the average thickness of the plaster used for repairing the walls was between 5 and 15 centimetres.⁵¹⁴ Assuming the same numbers for the tomb of Senenmut brings the total plaster needed to cover the internal walls to

⁵¹⁰ The same two men probably also occur in O. 64, only here the text is damaged and only the numeral 2 is legible. Hayes' reconstruction of the word for 'men' (*s*) seems probable.

⁵¹¹ Axial hall: 17.5m x 4.6m = 80.5m² x 2 (both walls) + ((end wall) 2.16m x 2.57m = 5.55m²) = 166.55 m². Transverse hall: (approximated height of walls is 4 meters without the arched ceiling) = 235.88 m². (North end wall: 5.72m x 4m = 22.88 m². Northwest wall: 11.8m x 4m = 47.2 m². Northeast wall: 12.02 x 4m = 48.08 m². South end wall: 5.49 x 4m = 21.96 m². Southwest wall: 11.82 x 4m = 47.28 m². Southeast wall: 12.12 x 4m = 48.48 m²). Total: (166.55 m² + 235.88 m² = 402.43 m²) x 10 kg = 4024.3 kg.

⁵¹² Cf. Rasmussen (2003), 78.

⁵¹³ I have not been able to find a precise reference for this, but taking the poor quality of the rock towards the top of the Qurna hill and the many fissures within the tomb into account, it seems highly probable that the average plaster thickness was well beyond 1 cm.

⁵¹⁴ Dzierbek (1992), 23.

somewhere between 50 and 145 tons. Add to this the quantity of plaster needed for the ceilings and floors,⁵¹⁵ and possibly the columns of the transverse hall as well.

The amount of plaster would have had consequences for the logistics of the tomb construction process. Based on the construction scale baseline (see 4.1.1 below), the approximate building time of TT 71 was between four and five years, which means that the yearly quantity of plaster needed would have been between 10 and 35 tons, depending on the average thickness. Correlating this with the number of workdays per year will give insight into the number of workmen required to deliver the plaster. For example, if it was the lower amount of 10 tons needed per year and the number of workdays was 200, allowing for workdays elsewhere and festivals etc., a single worker should be sufficient to carry the required daily 50 kilos of plaster to the construction site. Further, an analysis of the production time and especially the drying time of plaster of the type used in TT 71 would provide an insight into where the plaster was prepared.⁵¹⁶ These aspects also reveal that the few ostraca documenting delivery of plaster must have been the tip of the proverbial iceberg or that the scribes did not deem it necessary to continue recording this activity.⁵¹⁷

Finally, there is the name Amenemhat, which appears in a number of the Senenmut ostraca as well as in the Deir el-Bahri corpus. Because the name is relatively common, each document could be referring to a different person, but based on the content of the texts, at least some of the names may belong to the same man,⁵¹⁸ who seems to have been in charge, perhaps as a foreman or an administrator, but not much more information can be gleaned from the texts. In O. Cairo CG 25501 (l. 4-5), Amenemhat also seems to be in charge or leading 10 workmen who themselves are recorded as having achieved a certain number of *nbi* (*s* 10 *ir(i).w nbi* [...]). The number of men of whom he was in charge here corresponds to the number of workmen listed in the Senenmut ostraca and these 10 workmen may have been stonecutters or other specialists.⁵¹⁹ Assuming that the name does indeed belong to the same man, Amenemhat was thus in charge in some way of workmen in both Deir el-Bahri, possibly on the construction of both the Djoser Djoseru and of TT 353, and at the site of TT 71.

⁵¹⁵ Cf. Dorman (1991), 26.

⁵¹⁶ A hint to a location may be found in the tomb of Ineni (TT 81), who created fields presumably for the production of *ḳṣḥw*, which can be interpreted as coarse plaster or mortar. Cf. Urk. IV, 57. During the Ramesside Period the plaster or gypsum for the tombs in the Valley of the Kings was made in or around Deir el-Medina. Černý (1973b), 36-39.

⁵¹⁷ In Deir el-Medina during the Ramesside period gypsum was and delivered in measures of *khar*, presumably before it was mixed with water for practical reasons. These deliveries varied in size, from less than one *khar* to six *khar* at a time. Černý (1973b), 39.

⁵¹⁸ In O. 84 (l. 2), he appears to have been in charge of people (*rmṯ nty.w m-ṣ imn-m-ḥṣ.t*); O. 93 l. 1 reads as an "Account of Amenemhat" (*snn n imn-m-ḥṣ.t*); In MMA Field no. 27057.2 (Hayes no. 13) verso l. 2, he is labelled as a "foreman" (*ṯṣ.w imn-m-ḥṣ.t*).

⁵¹⁹ Cf. for example Laboury (2012), 202.

3.5.2 - Institutions supplying men

I will in the following discuss how institutions are identified in the various documents. Three levels can be identified: specific institutions that are directly mentioned in the texts, institutional affiliations that can reasonably be assumed, although not expressed directly, and finally, circumstances where only indications that men and resources were supplied from an unknown institution are present.

Establishing the social structure between Senenmut and the men who built his tombs involves an analysis of the institutions that supplied not only manpower but other resources as well. It has previously been assumed that the construction of the two tombs was done using workmen supplied partly by royal estates or diverted from local, large scale building projects like the Djoser Djoseru of Hatshepsut.⁵²⁰ At Deir el-Bahri, the manpower was provided not only from nearby villages but also by state and temple institutions, each with its own people in command. Eyre, for example, describes the general logistics of gathering manpower as follows: *“The officials responsible for quarrying and building works were essentially drawn from the controllers of resources, those with authority over finance and personnel.”*⁵²¹ However, the personnel that are named and working on TT 71 are not attested in the surviving documents from the royal building site.⁵²² This suggests that a group of specialists was employed long-term at the tomb and that the people diverted from other projects are most likely unskilled labourers.

Analysing the institutions and estates contributing to the tomb(s) of Senenmut helps establishing the scale of the construction project and possibly to determine the approximate number of persons involved. It also outlines the underlying structures of economic and political power that were utilised in these arguably personal endeavours,⁵²³ which in turn set precedence for the construction of tombs in the Theban area. In this vein, Melinda Hartwig describes the level of lavishness of the tomb as reflecting a combination of the tomb owner’s personal means and his access to skilled craftsmen through his connections within a particular branch of the administration.⁵²⁴ Focusing on the artists, including the painters, Hartwig argues that they *“belonged to workshops connected to state or temple institutions, which provided their craftsmen with materials, produce, goods, and services.”*⁵²⁵ Hartwig suggests a connection between the painters and the temple of Amun.⁵²⁶ These would presumably have been mentioned by name like the specialised

⁵²⁰ See, for example, Hayes (1960), 41-42.

⁵²¹ Eyre (1987b), 192.

⁵²² The name Teti does appear on O. MMA Field no. 27057.4, (recto l. 9) but with the specification of this person being from Hermopolis (*tti n hmnyw*); the Teti mentioned in the work records from TT 71 never carries a geographical origin.

⁵²³ See for example F. Dobbin (2005, 45) on the relationship between power and social relationships.

⁵²⁴ M. Hartwig (2004), *Tomb Painting and Identity in Ancient Thebes, 1419-1372 BCE*, 22-23.

⁵²⁵ Hartwig (2004), 23.

⁵²⁶ Hartwig (2004), 24.

craftsmen of TT 71, e.g. Teti and Beshau, who through their skills were connected to this important institution, perhaps in the same way as the sculptors depicted in the tomb of Rekhmire are described as belonging to the temple.⁵²⁷

Only two documents from TT 71 and Deir el-Bahri directly mention official institutions or estates which render tracing the social relations of Senenmut or demonstrating the scale of the project difficult. In the majority of texts dealing with such matters, they only hint at presumed institutional activities, e.g. where men or resources were supplied to the building site(s).

3.5.2.1 - Institutions

The eight lines of O. 83, found within the forecourt of TT 71, describe two officials, one town, and one scribe as having supplied a total of 56 men.⁵²⁸ Senenmut, in the capacity of steward of the king (*imy-r pr n nsw*),⁵²⁹ supplied 21 men and the vizier, possibly Hepuseneb,⁵³⁰ supplied 7 men. The town of Neferusy is responsible for 23 men, while the scribe Hori is ascribed 5 men. Senenmut is not directly mentioned, but as with O. 62 found in the same location, it seems plausible that the title refers to him. The 21 men he supplied could have been from his personal estate⁵³¹ or from the institution he was in charge of as Steward of the King.⁵³² Thus, it is impossible to determine whether they were local Thebans. In any case, Senenmut supplied three times as many as the office of the vizier, who is also not further described either by name or location.

The town of Neferusy⁵³³ had sent 23 men, but as the work on TT 71 was not a continuous affair, it seems reasonable to assume that the men were also supposed to work on the larger construction sites. It seems plausible that the men were supposed to be shared in the time they were present, although this is not made explicit. The question of why they were sent to Thebes in the first place remains, but an economic reason seems likely. However, in line with Brian Muhs' suggestion that the ancient Egyptian government of the Old Kingdom probably did not reach the individual person, but rather contented itself to taxing and demanding services from institutions,⁵³⁴ it seems equally plausible that a specific institution whose

⁵²⁷ N. de G. Davies (1943), *The Tomb of Rekh-Mi-Re at Thebes*, pl. 60.

⁵²⁸ It is not explicitly mentioned that the men are for a specific purpose, but the context of the find spot makes this interpretation plausible.

⁵²⁹ MMA Field no. 27057.8 and 9 – Hayes 1960 no. 15 possibly mentions Senenmut and his title of Steward. It has, however, not been included here for the simple reason that it is in two pieces, which could be from the same jar due to the material, but could as easily be from two separate vessels.

⁵³⁰ Hayes (1942, 23 n. 130) tentatively suggests this name. Cf. Helck (1958), 286-289.

⁵³¹ Assuming he had a personal estate or property he could use as he saw fit.

⁵³² For a description of this title see chapter 4.2.2.

⁵³³ Approximately 380 kilometers north of Thebes. Laboury (2012), 202.

⁵³⁴ Muhs (2016), 98-99.

authority extended to the people of Neferusy was responsible for the contingent of workers during the New Kingdom.⁵³⁵ The town also contributed men in O. Cairo SR 12204,⁵³⁶ also found in Sheikh Abd el-Qurna,⁵³⁷ albeit only one stonecutter and one *hmt*-worker.⁵³⁸ Who or what the scribe Hori represented remains unclear. The name is very common and the necessary context of his contribution is unknown.

The 19 lines on the recto of O. MMA Field no. 27057.4 (or Hayes no. 14)⁵³⁹ are written in two rows, each line ending in a repeating sign and a numerical value. Here, three institutions are mentioned as having provided men or materials for the construction of TT 353.⁵⁴⁰ First is the 'House of the king's wife' (*pr hmt nsw*), second the 'Overseer of the Seal' (*imy-r htm.t*), and third 'the Pharaoh' (the great house) (*p3 pr-ꜥ3*). In addition, the text also mentions Senenmut, this time by his name but presumably referring to his estate.

(1)	...:	...:	...:	2
(2)	...:	...:	idem:	2
(3)	...:	Senenmut:	idem:	2
(4)	...:	House of the King's Wife:	idem:	2
(5)	Month 4 of Shemu:	Senenmut:	idem:	11
(6)	Idem:	House of the King's Wife:	idem:	3
(7)	Idem:	Overseer of the Seal:	idem:	4
(8)	Idem:	The Pharaoh:	idem:	1
(9)	5 epagomenal days:	Overseer of the Seal:	idem:	2
(10)	Idem:	House of the King's Wife:	idem:	2
(11)	Month 1 of Akhet:	The Pharaoh:	idem:	2
(12)	Idem:	House of the King's Wife:	idem:	2
(13)	Month 2 of Akhet:	Overseer of the Seal:	idem:	10
(14)	Idem:	House of the King's Wife:	idem:	4
(15)	Idem:	Senenmut:	idem:	2
(16)	Total:	Overseer of the Seal:		19
(17)		Senenmut:		19
(18)		House of the King's Wife:		15
(19)		The Pharaoh:		14

What the various institutions contributed is unfortunately lost with the upper part of the ostrakon. Nevertheless, it is suggested here that the item in question is the same in all instances, as the numerical

⁵³⁵ Quite possibly it was an institution similar to that of 'Mayor of Neferusy' (*hsty-ꜥ n nfrwsy*), mentioned in O. Leipzig 13, line 9, who ordered these men south. Cf. J. Černý & A. H. Gardiner (1957), *Hieratic Ostraca, volume I*, pl. 36.2.

⁵³⁶ Megally, Mounir (1981), "Un intéressant ostrakon de la XVIIIe dynastie de Thèbes", 296 + pl. XXXV.

⁵³⁷ Megally (1981), 294.

⁵³⁸ The ostrakon lists a total of 10 stonecutters and 13 *hmt*-workers.

⁵³⁹ Hayes (1960), 41-42, pls. XI-XIA.

⁵⁴⁰ This assumption, first offered by Hayes, is based on the provenance of the ostrakon, found in the quarry close to the tomb entrance. Cf. Hayes (1942), 41 and 39.

values are tallied together at the end. Further, a strong argument could be made for restoring the word ‘man’ (s) in the line just above the readable ‘idem’ sign of line two, simply because of its brevity.⁵⁴¹ This would seem to be in line with the relatively low numerical values for the remaining entries, including the total of lines 16-19, which adds up to 67. As Hayes notes, the missing text at the beginning would probably also have included the date ‘Month 3 of Shemu’, and the document thus records the contribution of the institutions over a four month period, at the end of one year and the beginning of the next. Following both restorations would mean that each institution contributed only two men in the third month of Shemu, i.e. a total of eight. In the fourth month of Shemu, Senenmut’s contribution increases dramatically and the combined monthly total rises to 19. The five days of the New Year have only four men recorded and the same goes for the first month of Akhet. Senenmut does not contribute in these two periods, which seems to be a period of low activity. This changes in the second month of Akhet, where the Overseer of the Seal contributes 10 men, next to Senenmut’s two, and four from the House of the King’s Wife.

As already noted by Hayes,⁵⁴² the totals at the end do not add up with the numerals recorded for the different months: The preserved numbers add up to only 51, whereas the total comes to 67. This means, that there very likely are more lines of text missing above the already damaged lines 1 and 2. I suggest that ‘Month 2 of Shemu’ was once part of the text and that the missing 16 men, if such, were contributed by the four institutions in a similar distribution pattern as for the second month of Akhet. This month also has a combined number of 16 with one large contributor and smaller additions by the three others. This adds up to a total time span of five months and five epagomenal days. Assuming these interpretations are correct, this suggests an interchanging pattern of high and low intensity work on the tomb. At the start is a month with 16 men followed by a month with only eight men, then a month of high intensity with 19 men, followed by five days with only four men and an equally low intensity month of four men, and finally, a productive month with 16 available men. This, however, does not reveal any details as to what construction phase this text refers.

Whether dealing with specific resources or the manpower that was being supplied, this ostrakon documents the fact that monthly inventory lists were being kept in Deir el-Bahri, and most likely also for the work on TT 353, which suggests a similar practice for the documents concerning TT 71. As described above (3.2), the ostraca from TT 71 were daily entries, the purpose of which is not entirely understood. However, by accepting them as being destined for a monthly report where their cumulative information was recorded, they can, and probably should, be seen as the ancient tomb builders’ equivalent of post-it notes.

⁵⁴¹ Cf. O. 83 and MMA Field no. 23001.39 (Hayes (1960), no. 6).

⁵⁴² Hayes (1942), 42.

3.5.2.2 - Possible connections to institutions

In the following section, I list and briefly comment on the entries in the ostraca that presume a prior knowledge of institutions of origin. These are undefined and unnamed places supplying men, materials and/or resources.

On the recto side of O.MMA Field no. 27057.2 (Hayes 1960 no. 13), it is stated that a division of labourers/servants of Senenmut (*psš n n3 n sdm.w-š n sn-n-mwt n hry 2*)⁵⁴³ between two chiefs, named Ipuwer and Marubenrekhy, took place, but the purpose in doing so - let alone the outcome - is not described. On the verso side, the text mentions 'those who are in the storeroom/magazine of Senenmut' (*nty hr šnwt sn-n-mwt*),⁵⁴⁴ which could be referring to Senenmut's personal property located on or near his estate, or an abbreviation for a royal/state institution which was under the command of Senenmut.

On the recto, line 13, a man named Teti is recorded as being from Hermopolis (*n hmyw*). Following this, in line 14, a man called Senu is said to be from a place called Wabru (*n w^cb-rw*) and line 16 reveals a third man, Qenamun, as coming from Tehesu (*n thsw*).⁵⁴⁵ The scribe's specification of the two men's place of origin illustrates that people were being brought in from other parts of Egypt.⁵⁴⁶ This is further illustrated in an administrative letter⁵⁴⁷ found in close proximity to TT 353. It was written by a man named Tet and sent to the Overseer of all Works of the king (*imy-r k3t nb nt nsw*), Djehuty, the owner of TT 11, who was directing the craftsmen at the Djoser Djoseru.⁵⁴⁸ In the letter, Tet urges Djehuty to send a letter to the High Priest of Ra in Heliopolis explaining why he has transgressed against a third man named Ptahsokar in an unspecified matter which includes 'the people of Heliopolis' (*n3 n rmt iwnw*). These were very likely temple workmen, who had come from Heliopolis to work on Hatshepsut's temple at Deir el-Bahri, and who had found themselves at odds with Djehuty in some way. That they have come from Heliopolis is demonstrated by the suggestion to explain matters to the High Priest. Neither the letter nor the ostrakon mentioned above, however, specify the reason behind the influx of regional labour to Thebes, but it seems reasonable that they were there on royal initiative.

In O. 69, a priest (*p3 hm-ntr*)⁵⁴⁹ is recorded as having brought or led an unknown number of 'servants' (*sdmw*), most likely meaning unskilled labourers, to the building site of TT 71.⁵⁵⁰ The priest is not defined by

⁵⁴³ O.MMA Field no. 27057.2, recto l. 1-2.

⁵⁴⁴ l. 10.

⁵⁴⁵ Lines 11 and 12 have the names Tjerqet and Medjatembuben whose respective places of origin have been lost.

⁵⁴⁶ Cf. Laboury (2012), 202-203.

⁵⁴⁷ Hayes (1957), 89-90, pl. XIII (2).

⁵⁴⁸ J. Galán (2014), "Creativity and Innovation in the Reign of Hatshepsut", 250.

⁵⁴⁹ This could also be a personal name.

affiliation to any temple, however, O. 85 mentions the High Priest of the barque Userhat, Senmen (*hm-ntr tpy n wsr-h3.t sn-mn*),⁵⁵¹ which Hayes interprets as meaning the barque of Amun-Userhat,⁵⁵² i.e., the sacred barque of Amun of Karnak. Adding to this interpretation is O. 87, which lists a group of men labelled as ‘followers of the god’ (*n3 šms.w n p3 ntr*),⁵⁵³ which in a Theban setting most likely refers to Amun.

On the verso of O.MMA Field no. 27057.3 (Hayes 1960 no. 12), the crew of the Djeseru (*n3 n is.w.t n dsr.w*), i.e., the temple of Hatshepsut written in an abbreviated form, is said to have done ‘the same’ in the city, but it is unclear whether this refers to the text on the recto. It is also unclear to what extent there is a connection to TT 353, other than the ostrakon having been found close to its entrance in the shale quarry. The text does, however, demonstrate that employees of a royal institution worked in another location away from their principal geographical affiliation and that this was recorded within, or at least in the vicinity of, the employing institution.

3.5.2.3 - Hypothetical affiliations

In this section, I focus on the entries of the ostraca that describe supplies or workforces having been brought in. The texts do not specify where these resources originate or what their purpose is. They do, however, demonstrate that places of gathering, storing, and quite possibly administration of supplies and workforces were a precondition for the deliveries recorded in the documents.

As discussed above (see chapter 3.4.2.3), O. 63 and O. 64 mention deliveries of plaster, water, and wood. These items would presumably have been either collected or produced by the men bringing them, or had been stored at a magazine in the vicinity of Sheikh Abd el-Qurna.

O. 81 records a man named Djehuti, who is labelled as ‘the follower’ (*p3 šms*), perhaps in the meaning of ‘follower of the god’ as seen above in O. 69. Alternatively, Djehuti could be a ‘follower of the king’ (*šmsw nsw*),⁵⁵⁴ which would affiliate him with the royal court and as such quite possibly make him an administrator acting on behalf of either the king or possibly Senenmut. This seems to be the case in the remaining text of the ostrakon, first referring to the “plan of the follower Djehuti” (*šhr n dhwti p3 šms*) and then to an intended action by him, reading “He shall go bring the people” (*k3 šm=f r in(i).t n3 n rmt*).⁵⁵⁵

⁵⁵⁰ O. 69, l. 1-2.

⁵⁵¹ O. 85, l. 1-3.

⁵⁵² Hayes (1942), 23, n. 132.

⁵⁵³ O. 87, l. 1-2.

⁵⁵⁴ Cf. Hagen (2016), 160.

⁵⁵⁵ O. 81, l. 3-4.

O. 82 is a document of nine lines which clearly records groups of workmen specified by profession or named individuals, but where the crucial information at the beginning is now lost, similar to O. MMA Field no. 27057.4 above. Also similar to the latter document is the way in which O. 82 is laid out in a spreadsheet fashion, each person or group is followed by three ‘idem’ signs, each followed by a numerical value. Only in the third location of line eight is it specified that whatever is being recorded is here ‘absent’ (*wšf*).⁵⁵⁶ However, this could refer to any number of things, but very likely to as workers or rations in this instance. In line 9, which is badly damaged, the numerical value of 17 towards the end is specified with the preceding word ‘work’ (*ḥꜥk.t*), which also is open to interpretation.

O.86 is less complex but does not provide a purpose for its creation, since only the lower half of the document is preserved.⁵⁵⁷ The remaining text lists three different professions each followed by a numerical value, which in the last line is summed up to give a total of 39.⁵⁵⁸ Presumably, the text at the beginning would have specified the numbers as either persons, or rations for the different professions.

The six ostraca O. 91 to O. 96 are ration and supply lists, recording various commodities as bread, beer, wine jars (*mdwd*), leeks, clothing, fodder (presumably for animals), cord or string, and a log of cedar wood. All of these items were meticulously recorded by a scribe who oversaw their delivery and distribution, but this action also indicates that an unrecorded order or request for those items was placed somewhere. This presupposes a storeroom of sorts where the items could be counted and stored, and where the scribes’ documents could ultimately be checked and, if necessary, corrected. Such a facility would have had a superior who was responsible for its upkeep and economic welfare.

3.5.3 - Senenmut’s relationship with the institutions

In order to analyse the relationship between Senenmut and the institutions described above, a preliminary discussion of his titles is necessary. Assuming that a number of his titles entailed real responsibility, Senenmut was responsible for the daily running of a number of large institutions, including temples and the royal palace(s). Below are the titles that I argue would have been the most important for Senenmut, as they display connections to the institutions mentioned above. They also likely had direct influence on the construction of the two tombs in terms of what Senenmut himself financially and logistically could have contributed to the project. This section will not discuss the meaning of each title in greater detail, but merely comment on their relevance to the documents discussed above. A more detailed analysis of the titles is presented in the chapter four (see 4.2.2).

⁵⁵⁶ Cf. Hayes (1942), 33.

⁵⁵⁷ Hayes (1942, 24) suggests that five lines have been lost, but does not offer an explanation as to why.

⁵⁵⁸ Soldiers (*wꜥw. w*): 4, Woodcutters (*šꜥd. w*): 10, Fowlers and Fishermen (*wḥꜥ. w*): 8.

The selected titles of Senenmut can be divided into two categories or economic spheres (see chapter 4.2): Those with a connection to the king and those connected to the temple of Amun in Karnak. The first grouping consist of the titles ‘Great Chief in the Palace’ (*ḥry-tp ʿz m pr-nsw*), ‘Chief Steward of the King’ (*imy-r pr wr n nsw*), ‘Steward of the King’ (*imy-r pr n nsw*), ‘Overseer of all Works of the King’ (*imy-r kzt nbt nt nsw*),⁵⁵⁹ ‘Overseer of all Royal Works’ (*imy-r kzt-nsw nbt*), ‘Overseer of all Seals’ (*imy-r sd3wt nbt*), and ‘Overseer of the Seal’ (*imy-r sd3wt*).

The second grouping contains the titles ‘Steward of Amun’ (or ‘Overseer of the Temple of Amun’) (*imy-r pr n imn*), ‘Overseer of the Granary of Amun’ (*imy-r šnwty n imn*), ‘Overseer of the Fields of Amun’ (*imy-r 3ḥwt n imn*), ‘Overseer of Works of Amun’ (*imy-r kzt n imn*), and finally ‘Overseer of the Herds of Amun’ (*imy-r mnmnt n imn*).

In-between these two groups, we find the two titles of ‘Overseer of all Works of the king in the Temple of Amun’ (*imy-r kzt nbt nt nsw m pr-imn*) and ‘Overseer of Works of Amun in Djoser-Djeseru’ (*imy-r kzt n imn m dsr-dsrw*), both clearly overlapping with both spheres.

These titles are generally connected to the administration of the household economies of the king and of the god Amun. The first three titles would presumably have made Senenmut responsible for the management of financial affairs and human resources in the royal household, i.e., enabled him to plan, distribute, appoint, and rearrange the royal resources and employees of the large estates of the king around Egypt. The next two titles made Senenmut responsible for the royal building sites, granting him access to skilled craftsmen and unskilled labourers. As Overseer of the/all Seal(s) he was responsible for the royal treasury and seemingly in control of the state finances. Coming back to O. MMA Field no. 27057.4 (see 3.5.2.1) it is worth noting that both Senenmut and the unnamed Overseer of the Seal contributes with the same number of men.⁵⁶⁰ Similarly, the Overseer of the Seal who is recorded as having contributed 35 men in O. MMA Field no. 23001.39, line 2, may have been Senenmut. While Hayes for both ostraca suggests that the Overseer of the Seal should be identified as Nehesy,⁵⁶¹ the director of Hatshepsut’s Punt expedition, there is technically nothing to in the way of suggesting that it was Senenmut who is referenced. This suggests that O. MMA Field no. 27057.4 was recording estates as contributors rather than individuals. In any case, the two ostraca show what resources an Overseer of the Seal had at his disposal, which means Senenmut would at other some point in his carrier have had access to the same resources.

⁵⁵⁹ Djehuty (TT 11) held the same title. It is uncertain whether Senenmut was in office before or after, or even at the same time as Djehuty.

⁵⁶⁰ Assuming that this is what the document records.

⁵⁶¹ Hayes (1960), 34-35 and 42.

On a more local and at the time slightly less influential level, Senenmut was very highly positioned within the temple of Amun, although not at the top as High Priest. He did however have access to Karnak's financial capacity through the titles relating to the granary, the fields, and the herds (cattle) of Amun, and to the god's craftsmen and labourers as Overseer of Works. As Steward, Senenmut would arguably be in a position to organise the various resources of the temple in a similar fashion as with his royal responsibilities. While still important in their own right, the last two titles are mentioned here simply to demonstrate the overlap and interconnection between the two economic spheres of palace and temple. Although initially appointed to his offices by the king, vizier and/or the High Priest of Amun, Senenmut would have been able to direct and control the resources and craftsmen that he needed for the building of his tombs exactly because of the breadth of his institutional affiliation.

3.6 - The tomb construction process of TT 71 (and TT 353)

The following section is an attempt at synthesising the points discussed above into a chronological overview of the construction process of the tombs of Senenmut, mainly focusing on TT 71, but drawing on TT 353 where the material allows and including other material that has not previously been discussed. As the material primarily touches upon the daily building activities and only indirectly refers to the planning and administrative aspects, the main focus here will be on the building work. Nevertheless, there are a number of potential insights into the people involved and their individual role in the daily construction. I present the construction process in a series of five steps, which may be subdivided and expanded when and if new material evidence becomes available. The first three steps of planning, preparation, and the initial cutting and clearing, are very poorly documented in the Senenmut material. Step four contains the various aspects of the construction of the inside of the tomb and is the best understood and best documented stage, which means that it forms the largest part of the overview. The last step of use and interment is non-existent with regards to the written material, but this step was without doubt the intended goal. The overview in its entirety will form the basis for the comparison between this case study and the previous and the Theban private tombs discussed in chapter four.

3.6.1 - Step 1 - Planning

In this part of the construction process, Senenmut would presumably have had to obtain a 'building permit', such as an oral or written consent. Nevertheless, there is no physical evidence for this and it could be argued that at the time of Senenmut such a bureaucratic procedure was neither required of an official of his status nor had any planning procedure for the area been established. However, based on the

archaeological findings and subsequent arguments of Dr. Andrea Loprieno-Gnirs and the University of Basel Life Histories of Theban Tombs (LHTT) project, working on TT 95 and TT 84, it seems very plausible that there was a system in place in for allocating and distributing construction space at the end of Thutmose III's reign and continuing into the reign of Amenhotep II,⁵⁶² at least for the southern end of the Qurna hill where it seems that the future tomb owners most likely were granted areas in which to construct their tombs. As the façade of most tombs on the Qurna display a width that corresponds to the maximum width of the internal chambers and structures, this may be interpreted as having been a building requirement. In other words, the width of the façade determined the width of the internal features, but not the length or depth. From the upper tomb of Senenmut it seems that such a requirement was most likely not established in this earlier period of the 18th Dynasty in Thebes. Furthermore, the transverse hall of TT 71 does in fact exceed the width of the outside façade (see figure 7 above).

Considering Senenmut's assumed political and economic influence, he most likely had a proverbial *carte blanche* to select the exact location for both of his tombs and as such probably did not need any special permission to start building. Nonetheless, in the years of Thutmose III's reign, it would have become clear that space on the eastern slope of the Sheikh Abd el-Qurna would eventually run out and that control of the area was necessary.⁵⁶³ This can be gleaned from the fact that the tombs after the reign of Thutmose III follow the trend of not having internal chamber that exceeds the width of the courtyard.⁵⁶⁴ This is suggestive of an administrating authority.⁵⁶⁵ A text on a stela belonging to Djehuty, the owner of TT 110, makes the king a likely candidate: "*Thou enterest into the land given of the King, into the sepulchre of the West.*"⁵⁶⁶ A similar phrase is attested in TT 110 itself: '*Attainment of the burial-place which is in eternity and interment by the king's favour*'.⁵⁶⁷ The two texts suggest that the king was ultimately in control and was able to bestow land in the necropolis upon his subjects. Akhenaten indirectly claimed the same power over

⁵⁶² Personal communication, Dr. Andrea Loprieno-Gnirs on June 12th 2017.

⁵⁶³ For the control and management of burial space in the Middle Kingdom see J. Richards (2005), *Society and death in ancient Egypt; mortuary landscapes of the Middle Kingdom*, 178.

⁵⁶⁴ The following three Theban Tombs do not adhere to the width requirement: **TT 55** – the tomb of the vizier Ramose lies at the bottom of the Qurna hill, which may not have had the requirement during the reign of Amenhotep III, or the owner ignored the standard because of his position. Notwithstanding, the tombs of the other five viziers of the 18th Dynasty do not exceed the façade width in their internal structures. **TT 75** – exceeds the façade limitation due to the existence of an earlier tomb - cf. Kampp (1996), 311. **TT 226** – there was physically no space available for a courtyard - cf. Kampp (1996), 502.

⁵⁶⁵ Chauvet (2007), 315, considers whether there was a central royal institution charged with organising the Memphite necropolis the Old Kingdom. However, Chauvet (321) concludes that while the king might influence a building project he was not responsible for it. See also Snape (2011), 88.

⁵⁶⁶ After the translation by N. de G. Davies, & A. H. Gardiner (1915), *The Tomb of Amenemhet (no. 82)*, 56.

⁵⁶⁷ Following the translation by N. de G. Davies (1932), "Tehuti, owner of tomb 110 at Thebes", 283, pl. 44c.

his subjects at Amarna through a prayer addressed to the Aten: On Boundary Stela K, he requests of the god that the tombs of the officials be made in the eastern mountain of Akhetaten.⁵⁶⁸

Minnakht, for example, the owner of TT 87, claims on a now damaged stela that he received the tomb from the ruler.⁵⁶⁹ On the other hand, the owner of TT 99, Senneferi, may in his autobiographical text indicate that he himself was responsible for the construction of his tomb.⁵⁷⁰ Similarly, the owner of TT 82, Amenemhet, makes it clear on a painted stela within the tomb that he himself was responsible for the construction and decoration of his own magnificent funerary monument on the Qurna hill (*ḏw bḥn n tꜣ ḏsr*) as well as equipping it with a sarcophagus.⁵⁷¹

In the tomb of Nebamun (TT 90), there is further evidence of the king's influence, although not of his involvement in assigning land for tomb use. In one scene in the tomb, Nebamun receives the office of 'Medjay leader of Western Thebes' (*ḥry mḏꜣyw ḥr imntt nḥwt*) presumably at the end of his military career. The scene of the tomb owner receiving the office and official standard of the Medjay from the hand of a royal scribe named Iuny is accompanied by a long descriptive text which is a royal decree confirming the household, fields, property, etc. of Nebamun. The decree is, however, not addressed to Nebamun himself, but rather to an unnamed admiral who is supposed to carry out the orders concerning Nebamun and in return 'receive a good old age by the grace of the king' (*sšp iꜣw nfrt m ḥsw nt ḥr nsw*).⁵⁷² The king is thus claiming control over the continued well-being of the admiral, as well as establishing the property of Nebamun for posterity. The decree was of course of personal importance to Nebamun, and by placing its contents within the tomb decoration, Nebamun acknowledged the role played by the king in the life and death of the tomb owner. He does not, however, thank him directly, which is in line with the observation of Chris Eyre regarding New Kingdom tomb owners: they never stress their indebtedness towards the king as the officials of the Old Kingdom did.⁵⁷³

The king would for practical reasons have had a local administrator overseeing the necropolis, but it is unclear who held this responsibility. Stephan Seidlmayer suggests that it was the mayor of Western Thebes: *"The necropolises were under the civil administration. The Theban necropolis was supervised during the New Kingdom by a "mayor for the western side of Thebes" who was also the chief of the necropolis*

⁵⁶⁸ W. J. Murnane & C. C. van Siclen (1993), *The Boundary Stelae of Akhenaten*, 41, pl. 3.

⁵⁶⁹ For this interpretation, see Bryan (2006), 82. For the reconstruction and translation of the stela see H. Guksch (1995), *Die Gräber des Nacht-Min und des Men-cheper-Ra-seneb, Theben Nr. 87 und 79*, 151-157.

⁵⁷⁰ The text breaks off just before the place that might have contained the word for tomb. Cf. Strudwick (2016), 125-128, fig. 102.

⁵⁷¹ Urk. IV. 1048.

⁵⁷² N. de G. Davies (1923), *The Tombs of Two Officials of Thutmosis the Fourth (nos. 75 and 90)*, pl. XXVI.

⁵⁷³ Eyre (1987b), 198.

police.”⁵⁷⁴ Seidlmayer is probably referring to Pawero,⁵⁷⁵ who lived in the late 20th Dynasty (attested in year 16 of Ramesses IX and in year 15 of Ramesses XI) and who indeed was both mayor of Western Thebes (*ḥꜣty-ꜥ n imntt nīwt*) and Medjay leader (*ḥry mdꜣyꜣw*). However, Pawero is the only person attested carrying both titles, and while it is possible that he was responsible for the security of the necropolis area, there is no indication that he had any influence on the placement of the tombs, which Melinda Hartwig for example seem to indicate.⁵⁷⁶ The administrating body of the land of the necropolis is unfortunately as elusive as ever and awaits final identification, possibly through future documentary evidence.

3.6.2 - Step 2 - Preparation

The ostraca from TT 71 and Deir el-Bahri do not reveal much about the planning or preparation steps for either of Senenmut’s tombs.⁵⁷⁷ It is, however, reasonable to assume that before construction work could begin, Senenmut would have had to make arrangements for storing equipment, tools, and building materials. He, or the person he entrusted with the construction, would have had to identify and make arrangements with the more skilled craftsmen who could presumably not be expected to simply down their tools on other projects, especially if these were royal projects or related to Karnak. Senenmut’s position as overseer of works would mean that he was in regular contact with these craftsmen or with supervisors who would know them. The construction of TT 71 in particular would probably have been centred around the availability of these craftsmen, which would partly explain the timeframe of approximately five years for building this tomb.⁵⁷⁸ The unskilled labour could be brought in as need required and this seems to be supported by the textual evidence.⁵⁷⁹

The equipment and building materials on the other hand would have required a storage facility in some format, unless these were taken directly from the larger building projects. These, however, must have had their own places where things could be stored and produced, e.g. the plaster or the tools. These places were arguably organised on a similar principle as the *ḥtm* of Deir el-Medina in the Ramesside Period,⁵⁸⁰ of which there are numerous references to in the textual record. As mentioned previously the text on the

⁵⁷⁴ S. J. Seidlmayer (2001), “Necropolis”, 510.

⁵⁷⁵ Attested in P. Abbott (recto 1.7; 1.9; 4.5; 4.9; and 5.19), P. BM 9997 (5B:4), P. BM 10054 (verso 2.2), P. BM 10068 (recto 1.6 and 6.22, verso 3.6), and P. Giornale 17-B (recto B1:3).

⁵⁷⁶ Hartwig (2004), 22.

⁵⁷⁷ Cf. Eyre (1987b), 184.

⁵⁷⁸ One major issue with this is, of course, that the stonecutters described in the Senenmut ostraca do not appear in any other documents.

⁵⁷⁹ For example: O. 65 (three delivery men); O. 69 (unspecified number of servants who came with a priest); O. 70 (the text presumably refers to six men from two separate institutions); O. 71 (reads ‘giving work to three men’); O. 73 (records at least 20, possibly 25-30, unskilled labourers); O. 81 (describes an order or intention to bring an unspecified number of people).

⁵⁸⁰ See chapter 2.7.1.

verso side of O.MMA Field no. 27057.2 (Hayes 1960 no. 13) refers to a 'storeroom/magazine of Senenmut' which could either be a short-hand reference to one of the institutions for which he was responsible or it could be his private storeroom. If the latter is the case then it was in all likelihood located relatively close to TT 353 in the vicinity of which the ostracon was found, but not so close as to be regarded as being part of the building site. If the former possibility is the case it would mean that Senenmut was directly skimming the resources provided for a royal institution or a temple facility.

3.6.3 - Step 3 - Initial cutting and clearing

Ostracon 62 marks the beginning of the tomb construction on TT 71 and as such it describes the initial excavation of the Qurna hillside. The 29 *nbi* recorded as the result of the work of the 30 men was arguably the length of the outline for the façade of the tomb, marking the limits for the courtyard as well as the internal chambers yet to be excavated. However, the length recorded does not correspond to the final width of the façade (see figure 9). As argued above in 3.4.2.1, the façade was very likely expanded from the original plan, probably due to the poor quality of the friable rock. This means that only six windows were planned and that the seventh and eighth were added at a later stage, quite possibly while excavating the southern or northern ends of the transverse hall.

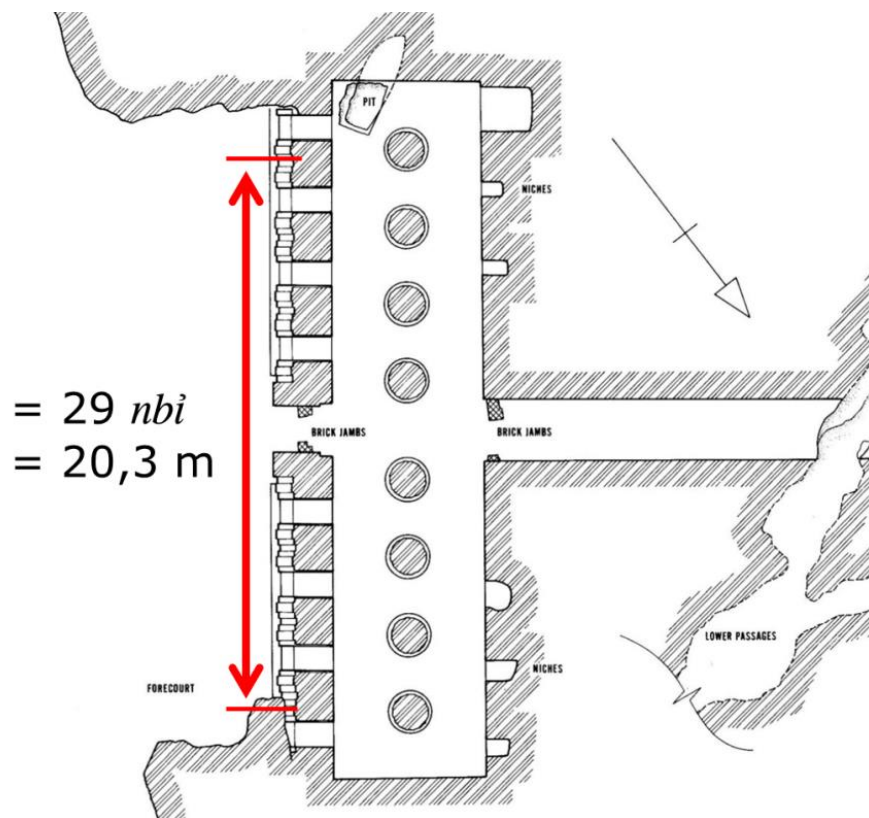


Figure 9 - The length of 29 *nbi* indicated on the façade of TT 71. From Dorman (1991), plate 3b.

The 11 masons appear to have cut or excavated the equivalent of 1.5 m³ of rock on that particular day,⁵⁸¹ but the precise location is uncertain. The alignment of their work is also difficult to ascertain or grasp. The masons could have been spread out along the 6 *nbi* in width and cut the cliff slope 1 *nbi* vertically down (which would normally be labelled 'height')⁵⁸² and 1 cubit 'towards the interior', which means removing the sloping cliff horizontally.

As described above (see chapter 3.5), it is possible that the three named men recorded in O. 90 supplied the tomb project with a large number of unskilled labourers, possibly diverted from the building project of the Djoser Djoseru of Hatshepsut, and these would presumably be expected to clear part of the outer courtyard of TT 71 and carry supplies up the hill. This is also the reason why I place this document in the early stage of the project, where large numbers of workers were conceivably needed more than at the later stages where work was concentrated within the tomb. The number of workmen is unusually high (150) and the fact that no other document records anything similar suggests that this was a single event. It is uncertain if the original slope of the hill would have accommodated this quantity of men, and if so, whether each man was excavating his own small sector, but if it can be assumed that they did, the daily clearance at one *dni* per person would amount to 21.5 m³ of rock and gravel.

3.6.4 - Step 4 - Internal construction

This stage is by far the best documented in the textual material. Following the chronological sequence described above in table 4 (see chapter 3.3), I here add the parts of the documents that are the most relevant and comment on the positioning in the sequence based on the analysis of the construction terminology (chapter 3.4). I include O. 62 and O.90 here as well, as they form part of the chronological sequence, but the rest of the ostraca exclusively records work done inside the tomb and deliveries for that work. This, in short, means the excavation of the transverse hall, the cutting of more straight walls, and the delineating of the columns, the repairing of the walls with plaster, the finer plastering, and the filling in of colour. It probably also means work on the axial hall, but this is much less clear from the documents.

⁵⁸¹ (1 x 0.7 m) x (6 x 0.7 m) x (1 x 0.525 m) = 1.5435 m³.

⁵⁸² A 'height' was probably understood as something to be measured from a floor level to a ceiling, but as this seems to be the very beginning of the work there was no ceiling yet.

Year 7

62 – Year 7, 4 prt, day 2. Beginning of work: 11 masons did 1.5 m³ and 30 men did 29 *nbi*.

90 – 1 šmw, Day 16. Amennekhu⁵⁸³ ... (number lost). Peniayt:⁵⁸⁴ 90. Innu:⁵⁸⁵ 60.

For the interpretation of O. 62 and O. 90, see the description of step three (3.6.3) above.

77 – 2 šmw, Day ? Work in the *hzyt*.

The *hzyt* is, according to Hayes, the “forehall” or “entrance hall”.⁵⁸⁶ O.77 is dated three months later than O. 62, at which point work could conceivably have started on the interior of the transverse hall. However, it is also possible that it should be dated to year eight or nine, as there are no immediate problems in assigning this document and the following two ostraca to a later stage of the construction process.

103 – 3 šmw, Day ? Iby.⁵⁸⁷

106 – 3 šmw, Day 26. Shaa.⁵⁸⁸ It is not possible to say much more about O. 103 and O. 106 except that work presumably was being executed on TT 71 during the third month of Shemu.

Year 8

74 – 1 zht, Day 28. Beshau begins work in the northern *šmnt*,⁵⁸⁹ Teti did 4 cubits in the southern side.

O. 74 probably recorded the beginning of work on the two sides of the transverse hall, excavating to the north and south of the initial cut of the central axis. The fact that Teti’s work is measured in cubits and not *dni* suggests that the scribe at this point of the building process did not consider it important to record the daily outputs in numbers of volume.

⁵⁸³ Not attested in Ranke.

⁵⁸⁴ Compare Ranke (1935), 132, 23.

⁵⁸⁵ Compare Ranke (1935), 36, 18.

⁵⁸⁶ Hayes (1942), 38.

⁵⁸⁷ Compare Ranke (1935), 20, 14-17.

⁵⁸⁸ The name Shaa (šꜥ) is not attested in Ranke.

⁵⁸⁹ “Extension” or “wing”. Also occurs in O.67. See Hayes (1942, 39) for discussion of the term. Also cf. O. Leipzig 13 (HO pl. 36.2) l. 3, where the term may be translated as ‘corridor’ or similar.

69 – 4 *zht*, Day ?⁵⁹⁰ The text mentions the *bh* or corvée of the servants who came with the priest and the result of their work, which is 11 *nbi*. The servants appear to be unskilled labourers and as the result of their work is recorded in *nbi*, they were arguably excavating part of the courtyard outside the tomb. The text further mentions Hepyhersaef who is recorded as having done a now lost number of *dni*, while Beshau did one *dni* and Sennefer performed the *ꜥꜥ*-task, which resulted in one *dni*. That the precise work of Hepyhersaef and Beshau was not recorded emphasises the task of *ꜥꜥ* that Sennefer did, underlining the importance or difference of this task (see 3.4.2.3 above).

75 – 4 *zht*, Day 20. Beshau was put to work in the *wmt*,⁵⁹¹ the result of which was 3 *nbi* in width of the *wmt*, 7 *nbi* in its height, and in its depth 3 cubits.

According to Hayes, the expected result at the end of line 5 was erased by the scribe.⁵⁹² This was perhaps because he realised he had recorded the three measurements in both *nbi* and cubits and was unable to convert them into a single resulting unit, possibly the *dni*. If the result had been left and been calculated, it would have been precisely 16.20675 m³, which converted back into an Egyptian measurement is exactly 112 *dni*.

76 – No date. Work of Kay: 28 cubic cubits. The other work: 140 cubic cubits.

Because the scribe recorded both results in cubic cubits, I have placed the ostrakon in the relative chronology just after O. 75 where the work of Beshau is recorded in a similar way.⁵⁹³

70 – 2 *pri*, Day 12. Receipt for work in/for the tomb by the scribe Nebamun from the scribe User until day 28, along with 6 men from *tꜥ mꜥwt* and the temple department (3 men from each).⁵⁹⁴ Assuming that the reconstruction of the relative chronology of the ostraca is correct, Nebamun would also be the author of O.

⁵⁹⁰ As the next document (O. 75) records 4 *zht*, day 20, there is a higher chance of the current document being from earlier in that month. It could, however, also be from year nine or ten.

⁵⁹¹ Hayes (1942, 32) describes *wmt* as “doorway” and similar, and having ruled out the outer doorway in the façade, comes to the conclusion that Beshau was working on the “doorway” to the axial hall. This has consequences for the interpretation of the term *nbi* (see 3.4.1.1 above). However, *wmt* can also be translated as ‘niche’ or ‘embrasure’ (cf. Hannig (2006), 207), and as such could possibly refer to the statue niche above TT 71, which fits the measurements of O. 75 better than the doorway, and would account for the use of *mdwt*, which is used twice elsewhere – in O. 62, which clearly describes work outside the tomb, and O. 76, where the recorded work very likely also takes place outside.

⁵⁹² Hayes (1942), 22.

⁵⁹³ It is unclear whether Hayes placed the two ostraca next to each other in his sequence for the same reason.

⁵⁹⁴ Hayes (1942), 22 n. 110. These six men were most likely unskilled labourers, as they are neither named nor specified by titles.

72 and O. 73, described below. After day 28 of the second month of Peret, the scribe User presumably took over the work again.⁵⁹⁵

72 – 2 *pri*, Day 20. The ostrakon was prepared to be inscribed with the work result of the day, but the space was left blank. The reason behind the unfinished ostrakon could be any of a number of possibilities.

73 – 2 *pri*, Day 26. 15 men who did *x-nbi*, 5 men who did *x-nbi*, x-number of men who did 5 *nbi*, all possibly under the authority of a watchman whose name is now lost. Beshau is recorded as cutting (*šꜥd*), the result of which is also lost.

The recording of only *nbi* as result for the three groups of men could be attributed to the inexperience of the scribe Nebamun, depending on the chronology and the assuming he was still the scribe in charge. In either case, the men referred to were most likely working outside the tomb, especially the 15 men, who would probably not fit inside TT 71 along with other workmen such as Beshau. This also means that they most likely were unskilled labourers set to clear or excavate the courtyard.

82 – 3 *pri*, Day 6. As described in 3.5.2.3, this ostrakon is a list of workmen and groups of craftsmen, but the space where the purpose of the document would have been defined is now lost. It does, however, contain names that are not attested elsewhere in the Senenmut corpus: the scribe Nedjemut⁵⁹⁶ and the man Shakar,⁵⁹⁷ of unspecified profession. In addition, it mentions a scribe named Ahmose, who might also occur in O. MMA Negative no. CN 33, and a stonecutter also named Ahmose, who is not attested with that label in the other documents.⁵⁹⁸

84 – 3 *pri*, Day 18. The two lines of the document make it clear that it was intended to be a list of names of the people who were under the authority of certain Amenemhat. The expected list of names was, however, not written out, but would conceivably have been of a number of unskilled labourers. Amenemhat is also not further specified by title, function, or institutional affiliation, which makes him difficult to identify elsewhere, as the name is very common.

98 – 3 *pri*, Day 20. The date is the only entry on the ostrakon. It could also belong in a different year of the tomb building project.

99 – 4 *pri*, Day 3. Ahmose. The date and the name are the only entries, and as with O. 103 and O. 106 above, the purpose and context of the dating and a single name are difficult to guess.

⁵⁹⁵ Laboury (2012, 202) suggests that the two *šš* should perhaps be read and understood as ‘painter’ rather than ‘scribe’.

⁵⁹⁶ Cf. Ranke (1935), 215, 15.

⁵⁹⁷ Name not attested in Ranke.

⁵⁹⁸ The name is quite common and do occur in O. 91, O. 99, and twice in O. 114.

63 & 64 – 4 prt, Day 5. Teti did the *dkr*-task with the daily result of two *dni* and Hepyhersaef did the *šd*-task which resulted in ½ *dni* removed from the tomb. Sennefer performed the *zcc*-task over an unspecified length of wall measured in cubits. The scribe has left a blank space on O. 63 where the numeral should have been and arguably did the same on O. 64.⁵⁹⁹ Sennefer is, however, specified as working in the entrance hall or transverse hall (*m t3 h3yt*).

These two ostraca, which essentially contain the same information for the same day, mark a difference in the recording of the work being done in the tomb. First, the scribe (presumably User) uses the measurement of *dni* to record the result of the two first craftsmen's daily work, and secondly, he uses specific terminology for all the work that was done. That the scribe did not record the result of Sennefer's work but left the space blank indicates that he was either unsure of how to document the result the *zcc*-process or that he intended to do so at a later stage. However, both O. 63 and O. 64 having blank spaces suggests the former option and indeed we see the scribe using the *dni* measure for Sennefer's *zcc*-work only 20 days later (see O. 65 below).

65 – 4 prt, Day 25. Sennefer performed the *zcc*-procedure with the result of five *dni*, which is labelled as completed (*grh*). Teti is recorded having done two *dni* of the *šd*-task. Beshau collected and brought two jars of plaster and two jars of water, while Ihay, who does not appear elsewhere, was in charge of three unnamed workmen who collectively brought three jars of plaster.⁶⁰⁰

66 – No date. Someone, possibly one of the scribes from O. 63 and O. 64, did the *w3h driw*-task using a now lost number of colour cakes. Beshau did one *dni* as a result of a now unknown task, possibly *dkr* or *šd*, and Teti most likely reached a similar result, although both pieces of information are now lost. Sennefer once again performed the *zcc*-procedure, possibly still in the transverse hall but further specified as "of the Resh (?)" (*[m t3 h3]yt n t3 rš(?)*). This may refer to the word *ršw* - 'joy' in some way, but it is unclear how.⁶⁰¹ Sennefer is recorded as having produced 12 *dni*, (1.74 m³ or 4700 kg if the volume was of limestone), which is a relatively high daily output compared to the other documents from TT 71. This could indicate a collective result over two or three days or that Sennefer had help or encountered a part of the tomb that needed heavy restoration work. However, the results of the *zcc* procedure were generally higher than those of the other tasks measured in *dni* (*šd* and *dkr* - see 3.4.2.2 and 3.4.2.4 above) and the interpretation that Sennefer simply had a very productive day is equally possible.

⁵⁹⁹ The numeral could conceivably have been lost when the four lines above on the recto side were damaged.

⁶⁰⁰ See 3.5.1 above.

⁶⁰¹ Hayes does not offer any suggestions in this regard.

Year 9 and 10

O. 69 should possibly be placed in one of these two years (see description of O. 76 in this section). Some of the ostraca placed in the unknown year below may belong in this period as well.

Year 11

80 – Year 11, 3 *zht*, Day 27. Opening the door (mouth) of the shaft (*m3yt*).⁶⁰² This possibly means the beginning of the excavation of one of the two shafts in the courtyard.⁶⁰³ The presence of these shafts and their relatively late construction date conceivably explains both the fact that TT 353 was closed off before it was finished and the sarcophagus found in pieces within TT 71.

67 – No date. Teti is recorded doing the *šꜥd*-task, resulting in 1.5 *dni*. As explained above (see 3.3), the placement of this ostrakon late in the construction process is due to the text referring to the ‘passage/corridor towards the back’, which means that both the excavation and overall project were nearing completion.

Unknown year

68 – Unknown month, Day 13. The text mentions Teti and another mason but no other information about them is preserved.

78 – No date. The text is a satirical poem describing from the author’s point of view the many more people in charge of the project than there were actually working.

79 – Another version of O. 78.

81 – No date. The text mentions the plans or conduct (*šhrw*) of a man named Djehuti who is called a ‘follower’ (*šms*), but in which capacity is not certain. Djehuti’s role is possibly to go and fetch some other people, the purpose of whom and from where is not recorded. It seems reasonable, however, that the text describes the recruitment of workers, most likely unskilled labourers, and that the reason why the location and potential purpose of these workers is not recorded, is because it was a regular and perhaps standard process.

⁶⁰² Cf. Hannig (2006), 334; and Lesko (1982), 204.

⁶⁰³ Cf. Dorman (1991), 25.

3.6.5 - Step 5 - The finished monument

The intended interment and funerary use of the two tombs probably never came to fruition, because there is no direct evidence of Senenmut having been buried in either of his tombs. The burial chambers of TT 353 were possibly sealed off before the final completion of TT 71, in which Senenmut's sarcophagus was found broken into hundreds of pieces.⁶⁰⁴ Regarding whether TT 71 itself was ever fully completed, the collapse of the ceiling of the northern end of the transverse hall caused enough damage to the decorated areas in its immediate vicinity to render the question impossible to answer. However, the unfinished appearance of the southern end of the façade, where the rock has not been smoothed (see image 15 above), suggests that the tomb was not finished. Thus, the final step in the tomb construction process for the funerary complex of Senenmut was arguably never achieved.

⁶⁰⁴ Dorman (1988), 108.

4. Private tombs of the 18th Dynasty

The statistical analysis of the 18th Dynasty private tombs of Thebes and Amarna presented in this chapter will be the basis for an attempt at reconstructing the socioeconomic realities of ancient Egyptian tomb construction projects. This chapter is dedicated to the results of the calculation of the size of the tombs from both Thebes and Amarna. As these results are volumetric values, they have little meaning taken out of context. I will, therefore, discuss the results in form of statistical charts and graphs, each pertaining to a specific question or point of view. The graphs reveal new ways in which to study the tombs. In each case, I will contextualise the observations in a historical and socioeconomic perspective.

The main part of this chapter is dedicated to the analysis of the data from the Theban tombs. First, I describe the construction scale baseline that is the average tomb production rate of the 18th Dynasty. The baseline will then be put in relation to the reigns of the individual rulers. After this, the chapter focuses on the size and volume of the tombs and the average output as a vantage point for interpreting the socioeconomic situation in each reign. Here, several problems can be identified in assigning tombs to specific reigns, but I argue for the necessity of doing so when it comes to statistics. Next, attention is drawn to what can be described as the ‘super tombs’, i.e. the very large tombs, and their owners, in an attempt to explain why these individuals were able to build personalised monuments on an almost royal scale. This will lead to an analysis of the titles of the tomb owners in general.

The second part of the chapter concerns the Amarna tombs. The tombs date to specific a period of time and as such offer an insight into the construction capabilities in terms of the excavation speed that could be achieved by the tomb builders towards the end of the Dynasty. I first look at the Amarna tombs in their own right, followed by the approach used in describing the Theban tombs, and then compare the two datasets in terms of construction time and the tomb owners.

4.1 - Theban Tombs

In this part of the chapter, the data from the measurements and calculations pertaining to the size and volume of the Theban private tombs will be presented as diagrams. Also labelled graphs, these will be explained and related to each other by analysing the differences and similarities between them and by describing the various historical and economic reasons that could affect them.

4.1.1 - Construction scale baseline

The baseline of the scale of construction is a reference tool that shows the average production output, based on the Theban tombs during the 18th Dynasty. The baseline is calculated by dividing the combined volumetric size of the 213 tombs (50464.09 m^3)⁶⁰⁵ by the combined length of the dynasty (255 years).⁶⁰⁶ The average yearly output is then $197.9 \text{ m}^3/\text{year}$, giving a reference point for comparisons between the construction output of different king's reigns as well as between the individual tombs.

The importance of the baseline lies in its neutrality: because it is based on data, it is an anchoring point with which it is possible to compare the fluctuations in tomb production, both in the size of individual tombs and in the collective volume of tombs during the reign of a specific king. Of course, the numbers for the length of the dynasty and the combined volumetric size of tombs can change and almost certainly will, but the numerical value will only change relatively little. If the combined volume of Theban Tombs increases by, for example, 5 new tombs of 1000 m^3 each, the construction baseline increases by less than $20 \text{ m}^3/\text{year}$.⁶⁰⁷

To put the construction scale baseline in context, I will briefly return to the tomb of Senenmut (TT 71) and the related textual material.⁶⁰⁸ Work on the tomb took place from year 7 to year 11⁶⁰⁹ of the reign of Hatshepsut (or Thutmose III). This means that the tomb was probably finished in the span of four or five years. The volume of TT 71 is 803.87 m^3 , which divided by four years yields $200.97 \text{ m}^3/\text{year}$ (or $160.77 \text{ m}^3/\text{year}$ for five years). This is very close to the calculated $197.9 \text{ m}^3/\text{year}$ of the construction scale baseline and underlines the potential of the approach.⁶¹⁰ The ostraca from TT 29 reveal a similar situation. They are in essence the monthly reports on the work on the tomb of Mery (TT 95), a high priest of Amun during the reign of Amenhotep II. The earliest date found in the texts is year 21, fourth month of Shemu, day one (although written on day 30)⁶¹¹, and the latest is year 25, first month of Shemu, day 30,⁶¹² which gives a

⁶⁰⁵ The 50464.09 m^3 of limestone represents the minimum as the volumes for the open courtyards of the tombs have been deliberately excluded in order to compensate for potential wrong measurements. As a point of reference and comparison, J. Röder (1965), "Zur Steinbruchgeschichte des Rosengranits von Assuan", 472, calculated that approximately 45000 m^3 of granite was removed from the quarries at Aswan during the Old Kingdom.

⁶⁰⁶ Both the number of tombs and the calculated volume should be continuously updated as new data becomes available.

⁶⁰⁷ As more and more tombs are found or rediscovered, or more precise data is made available, this is very likely to happen, and the construction scale baseline will have to be adjusted.

⁶⁰⁸ See chapter 3, in particular, the ostraca labelled as Work Records in Hayes (1942), 21-25, pls. XIII-XVI.

⁶⁰⁹ The earliest mentioned date in the Work Records is year 7, Peret 4, day 2 (O. 62), and the latest date is year 11, Akhet 3, day 27 (O.80). This gives the time span of 3 years, 7 months, and 25 days (or 3.65 years).

⁶¹⁰ 803.87 m^3 divided by $197.9 \text{ m}^3/\text{year}$ is 4.06 years.

⁶¹¹ O. 291492 recto l. 1.

⁶¹² O. 291491 recto l. 1.

timeframe of three years and nine months (or 3.75 years). The volume of TT 95 is 910.96 m^3 , which divided by the $197.9 \text{ m}^3/\text{year}$ construction scale baseline results in 4.6 years.⁶¹³

The two timeframes described in the textual material for each tomb (3.65 years for TT 71 and 3.75 years for TT 95) and the timeframes calculated by means of the construction scale baseline (4.06 years for TT 71 and 4.6 years for TT 95) vary by less than a year. It is worth noting that the timeframe from the textual evidence in both cases are shorter than the timeframe described by the baseline. Three explanations for this difference are possible: 1) If the textual material is correct, the work proceeded at a higher than average pace. 2) If the baseline is correct, there is roughly a year's work in connection to both tombs unaccounted for in the textual material. 3) If neither the baseline nor the textual material is correct, and the construction timeframe for TT 71 and TT 95 exceeded five years, this would indicate that excavation work did not take place on a continuous schedule (daily, monthly, or even yearly) and that the textual material is not complete. The construction work would very likely be disrupted by everything from festivals to sickness, and, from my point of view, the third option therefore seems to be the most convincing. This means that the construction scale baseline helps identify the problematic issue of relying solely on the information from textual sources and can suggest an alternative.

While the baseline cannot pinpoint the exact timeframe of a construction project, it can be used to show the average production rate at any given time during the 18th Dynasty, either for the entire period, as presented above, or focusing on just the reign of one king.⁶¹⁴ This not only allows for a more precise comparison between the textual material and the tomb sizes, but general comparisons can also be made for periods with no textual material.

4.1.2 - Number of tombs per reign

The construction scale baseline describes the average production output of tombs in terms of excavated cubic meters of rock, but the constant production rate that it describes was probably never achieved by the Egyptian workers. This is clear when looking at the distribution of the tombs in a diachronic perspective. However, it is useful to first explain the chronology of the 18th Dynasty and the problems in determining the precise dating of tombs within that sequence of years.

⁶¹³ If a length of 3.75 years is assumed as the maximum time in which the construction of TT 95 took place the average production output comes to $242.9 \text{ m}^3/\text{year}$ ($910.96 \text{ m}^3/3.75 \text{ years}$).

⁶¹⁴ This would require a re-calculation of the construction scale baseline for the relevant reign. The baseline for Thutmose III is, for example, $332.46 \text{ m}^3/\text{year}$, as he ruled 33 years and includes 10745.6 m^3 of private tombs ascribed to his reign.

Establishing the relationship between the number and size of the tombs and the period in which they were constructed is difficult for a number of reasons. First, there is the issue of dating a tomb to a broad time period and determining whether it was reused from an earlier period or dynasty. Then, there is the problem of its specific date within a period, as the ancient Egyptians did not refer to or record the passing of years in a modern sequential order. This makes it very difficult to place the tombs in a coherent chronological sequence, and the only realistic way is to do this, is by adhering to the Egyptian system and using the divisions of time set by the reigns of the kings. This does, however, have its own inherent problems (see section 4.1.4 below).

Using the chronology established by Ian Shaw,⁶¹⁵ and using the length of reign for each king in the 18th Dynasty, the following graph can be created (figure 10).

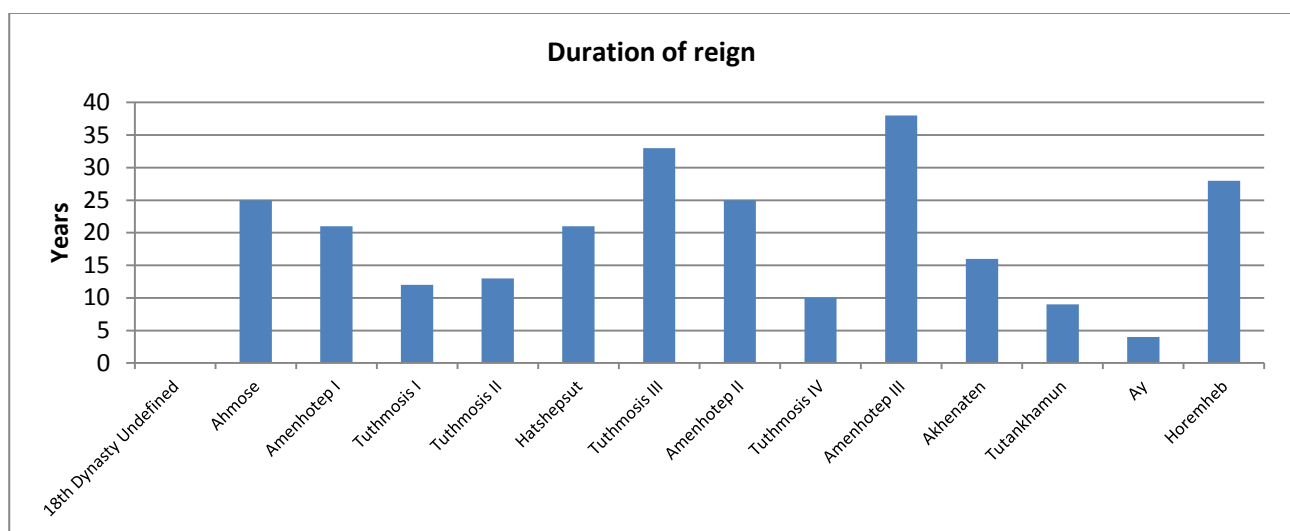


Figure 10 - The length of reign of each ruler of the 18th Dynasty.

Figure 10 does not include the short reign of Smenkhkare, as it possibly overlapped with both Akhenaten and Tutankhamun.⁶¹⁶ The graph takes overlapping years or years of co-regency in the former king's reign into account; for example, the first 21 years of the 54-year reign⁶¹⁷ of Thutmose III have been assigned solely to Hatshepsut, reducing the reign of Thutmose III to 33 years in the graph.⁶¹⁸

⁶¹⁵ Shaw (ed.) (2000), *The Oxford History of Ancient Egypt*, 481.

⁶¹⁶ *Ibid.*

⁶¹⁷ Attested in the tomb of Amenemheb (TT 85). Cf. Urk. IV 895, 16-17.

⁶¹⁸ The column labelled "18th Dynasty Undefined" is included in figure 10 only for the purpose of uniformity when compared to figures 11 and 12.

Following the approach of John Romer⁶¹⁹ and including only the collective number of Theban tombs, but further assigning each tomb to the reign of the kings of the 18th Dynasty, the following graph can be constructed (figure 11).

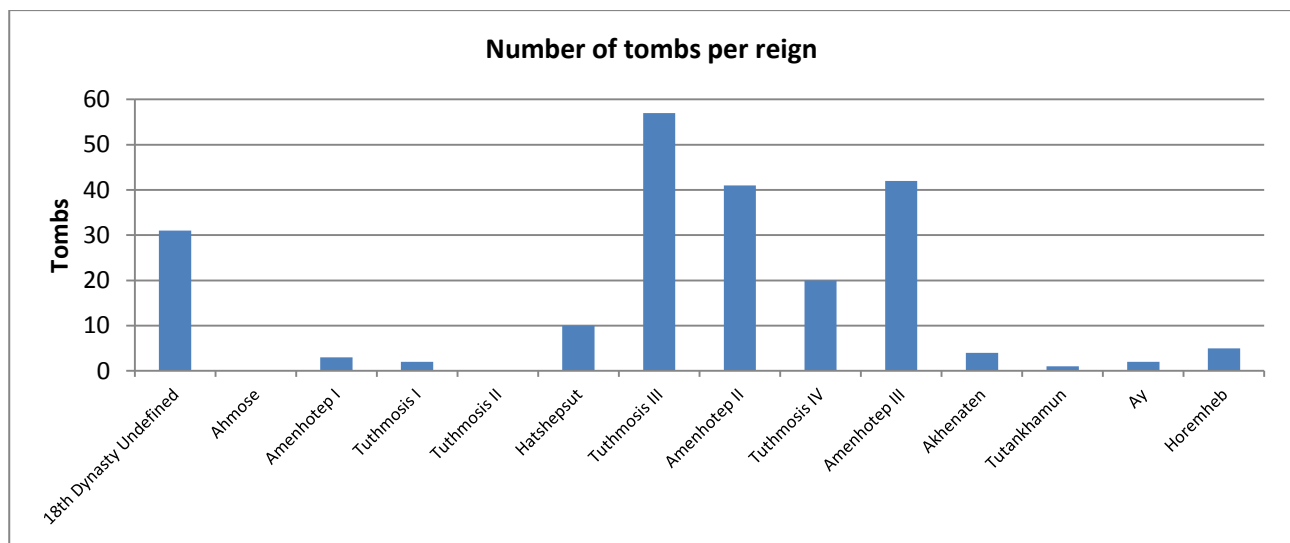


Figure 11 – Distribution of 218 Theban private tombs constructed over time.

The value 31 at the far left of figure 11 are the number of tombs which cannot be assigned to a specific reign of any king, including the five tombs for which I have been unable to find any data (see 1.3.2 above). These 31 tombs could arguably all belong to the same time period, but a more general distribution over the length of the dynasty seems more likely. Some of the tombs may belong to the reign of Amenhotep III,⁶²⁰ which could explain why only 42 tombs were constructed during his 38 regnal years, compared to 57 tombs during the 33 years of Thutmose III. 18 of these undated tombs have been broadly assigned by scholars to the early,⁶²¹ the middle,⁶²² or the late⁶²³ part of the 18th Dynasty, usually based on layout of the tomb or the style of decoration, but the remaining 13 tombs cannot be more specifically dated within the dynasty.⁶²⁴

⁶¹⁹ J. Romer, (1994), "Who Made the Private Tombs of Thebes?". In B. Bryan & D. Lorton (eds.), *Essays in Egyptology in honor of Hans Goedicke* (San Antonio: Van Sicklen), 211-232.

⁶²⁰ For example, tomb C4. Cf. L. Manniche (1988), *Lost tombs, a study of certain eighteenth dynasty monuments in the Theban Necropolis*, 102.

⁶²¹ Eight tombs: **TT 167** (Cf. Kampp (1996): stylistic and architectural criteria), **TT 231** (Kampp: stylistic criteria), **TT 232** (Kampp: architectural criteria), **TT 340** (no indication), **TT 396** (Kampp: architectural criteria), **TT 398** (Kampp: social affiliation to TT 397), **A7** (no indication), and **A10** (no indication).

⁶²² Two tombs: **TT 346** (no indication), and **A13** (no indication).

⁶²³ Eight tombs: **TT 150** (Kampp: stylistically end of 18th Dynasty), **TT 152** (Kampp: stylistically end of 18th Dynasty), **TT 245** (PM: blocked), **TT 254** (Kampp: stylistically comparable to TT 49), **TT 275** (Kampp: post-Amarna damage), **TT 338** (no indication), **TT 368** (Kampp: stylistically comparable to early 19th Dynasty), and **C4** (Manniche (1988), 102: dated to Amenhotep III).

⁶²⁴ 13 tombs: **TT 171** (Kampp: stylistic criteria), **TT 199** (no indication), **TT 203** (Kampp: stylistic criteria), **TT 204** (Kampp: stylistic criteria), **TT 230** (Kampp: stylistic criteria), **TT 297** (Kampp: stylistic criteria), **TT 325** (no indication), **TT 403** (Kampp: architectural criteria), **A1** (no indication), **A3** (no indication), **C5** (no indication), **C8** (no indication), and **C10** (no indication).

The reason that they cannot be assigned to a specific reign is that they do not mention the name of a king or any other person or feature that can be securely dated.

Comparing the graphs of figures 1 and 2 reveals a correlation between the length of the rulers' reign from the time of Hatshepsut and Amenhotep III to the number of tombs constructed during this time. That does not, however, seem to be the case in the very beginning of the dynasty and it is only from the time of Hatshepsut and onwards that tomb building becomes popular in the Theban necropolis. Over the reigns of the next four kings, the construction of tombs is at an all-time high, but then drops with the reign of Akhenaten. This can be explained by the king moving his capital to Amarna, possibly along with the people who would and could get a rock cut tomb, i.e. courtiers, high officials, etc.⁶²⁵ It is surprising that the return to Thebes as the religious centre of Egypt during the reigns of Tutankhamun, Ay and Horemheb does not seem to revive private tomb construction in the area. The reasons for this may be many, and the use of other necropoleis, such as at Saqqara,⁶²⁶ was possibly a major factor. As Romer claims, the rate of private tomb production in Thebes throughout the entire New Kingdom increases and decreases in tandem with the number of years of the reigning king, which to him suggests an overall consistency in construction.⁶²⁷ This also implies that production very likely did not slow down in the later phase of the 18th Dynasty, but moved to other sites. However, while the two graphs above do not include data from the 19th or 20th Dynasties, the tendency that Romer observes did not begin until the reigns of Hatshepsut and Thutmose III.

By the end of the dynasty, the construction of tombs had generally moved elsewhere. An overall correlation is visible in the middle of the dynasty between the numbers of tombs and the number of years of each king's reign, i.e. the longer the reign the higher the number of tombs.⁶²⁸ However, by dividing the number of tombs per reign by the number of years of that reign, the average output of tombs in each reign can be calculated and produces the graph in figure 12.

⁶²⁵ See for example B. Kemp (2012), *The city of Akhenaten and Nefertiti, Amarna and its people*, 17 + 41.

⁶²⁶ Cf. J. van Dijk (1988), "The Development of the Memphite Necropolis". In A. Zivie (Ed.) *Memphis et ses nécropoles au Nouvel Empire*, 37-46.

⁶²⁷ Romer (1994), 215.

⁶²⁸ For a discussion of the historical circumstances see chapter 5.1.3.

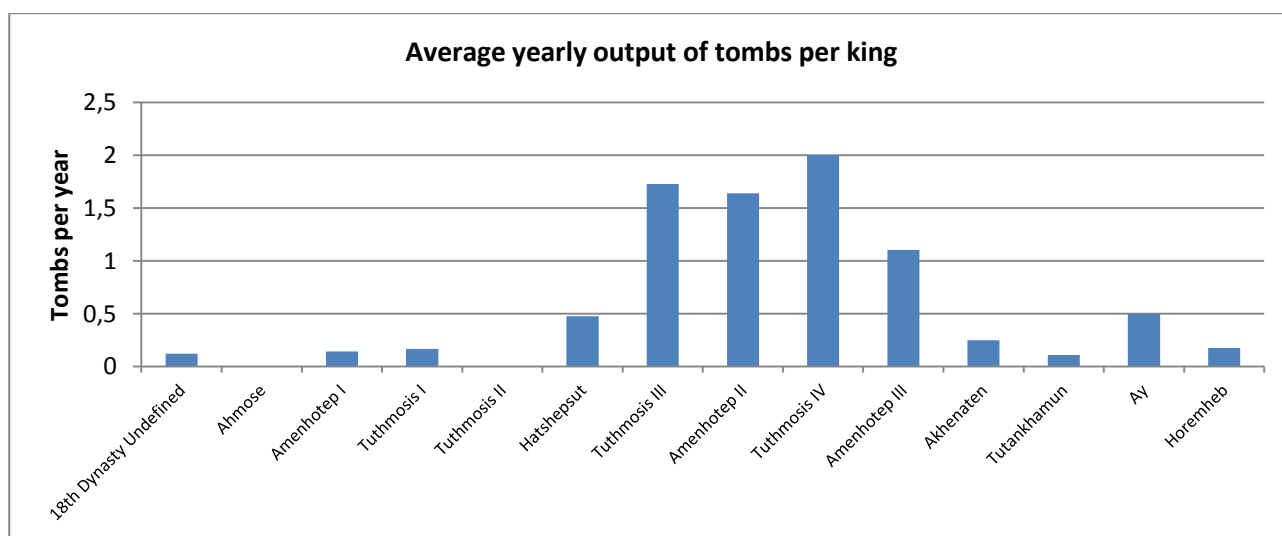


Figure 12 – Average number of Theban private tombs constructed per regnal year of each king.

Two columns of the graph need to be addressed. First, the output of tombs in the reign of Thutmose IV is much higher than the previous graphs would indicate, but looking at the numbers involved the reason becomes clearer. Thutmose IV reigned for 10 years and has 20 tombs ascribed to him, which gives an average output of 2 tombs per year. This is partly due to many of the tomb owners having been active during the reigns of both Amenhotep II and Thutmose IV.⁶²⁹ It might also be the case that the production of Theban private tombs during Thutmose IV had reached its peak, possibly due to the experiences gathered during the two preceding reigns. This would mean that after two generations of consistent tomb building, the workmen constructing the tombs were at a top level of proficiency.

The second column that merits attention is that of Ay; he reigned for only four years and only has two tombs ascribed to him, the outcome of which is a production outcome of 0.5 tombs per year. While this may reflect historical events, it is also possible that the four tombs constructed during his reign were begun as early as during the reign of Amenhotep III, possibly abandoned during the Amarna period, and resumed under Tutankhamun and finalised in the reign of Ay. Thus, similar developments as for the reign of Thutmose IV may be at play here, but both examples illuminate the need for qualifying the outlying data points.

Presenting the data above not correlated with the reigns of individual kings provides a slightly different perspective. By dividing the 18th Dynasty into three parts, the Early, the Middle, and the Late 18th Dynasty, and by correlating the number of years, number of tombs, and output of tombs, the following three graphs are constructed (figures 13, 14, and 15).

⁶²⁹ For a discussion regarding which tombs and tomb owners should be assigned to the reign of Thutmose IV, see: B. Bryan (1991), *The Reign of Thutmose IV*, 242.

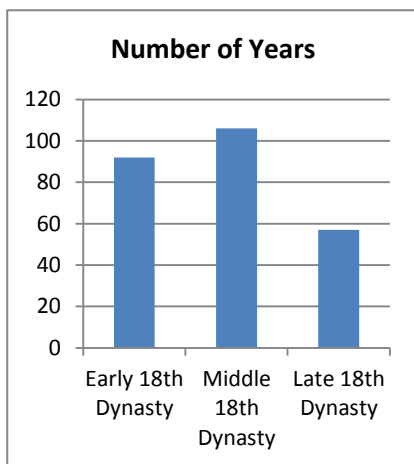


Figure 13

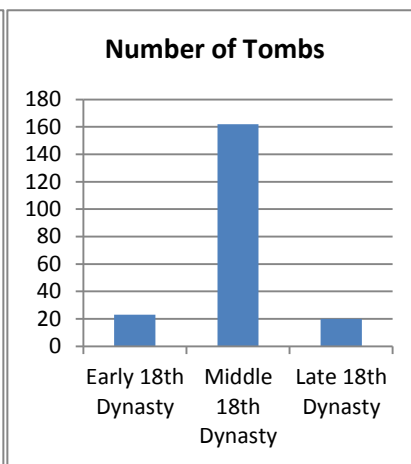


Figure 14

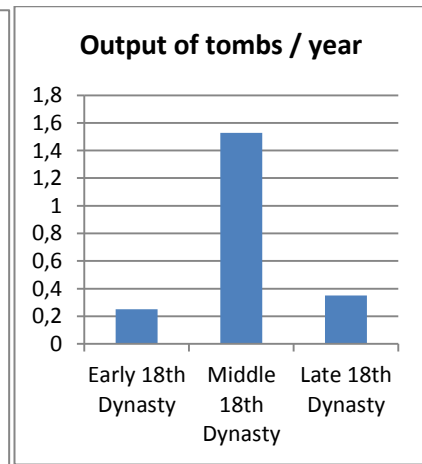


Figure 15

As mentioned in the introduction (1.3.2.1), the Early 18th Dynasty spans 92 years which include the reigns of Ahmose to Hatshepsut, the Middle 18th Dynasty covers 106 years and the reigns from Thutmose III to and including Amenhotep III, while the Late 18th Dynasty includes the Amarna Period until the beginning of the Ramesside Period, or 57 years. Comparing figure 13 to figure 14 demonstrates that the Middle 18th Dynasty was the period, in which most (Theban) tombs were constructed. Figure 15 shows that the yearly tomb output was similarly high in this period, with 1.53 tombs finished each year.

An argument against subdividing the dynasty in this way can be made, as the number of years in each part varies considerably.⁶³⁰ However, if the reign of Amenhotep III is moved into the Late 18th Dynasty, the results change, but not by much. Instead of the above 92-106-57 configuration of years, it is now a 92-68-95 configuration and the graphs appear as follows (figures 16, 17, and 18).

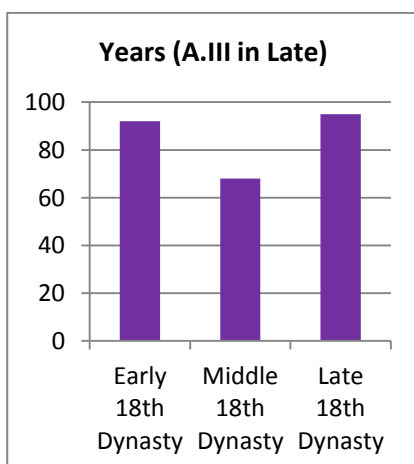


Figure 16

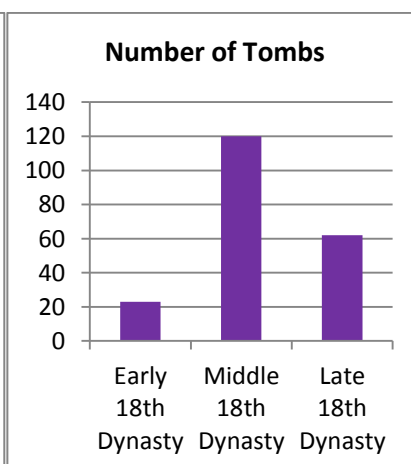


Figure 17

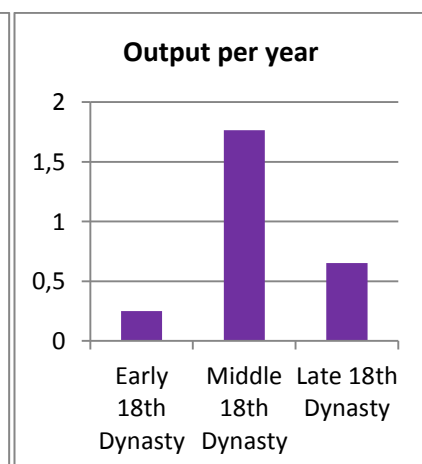


Figure 18

⁶³⁰ As discussed in the introduction (1.3.2.1).

As there is no change to the Early 18th Dynasty column in either years or number of tombs, there is no change in output, which remains at 0.25. The Middle part of the dynasty drops to 68 years and 120 tombs, but the output goes up from 1.53 to 1.77. The Late 18th Dynasty columns increase throughout the three diagrams to 95 years, 62 tombs, and the output climbs from 0.35 to 0.65. Even so, the overall impression is that the majority of tombs were constructed in the Middle 18th Dynasty, regardless of whether that period consisted of 3 or 4 reigns.

4.1.3 – The size of the tombs over time

Returning to Romer’s claim of an average output of 8 tombs per decade during the New Kingdom in Thebes, the data show that this also is true for the 18th Dynasty with an average of 8,35 per decade (213 tombs / 255 years X 10).⁶³¹ However, this is only the average and as the graphs above show, the situation was more complex with periods of both high and low production rates. Adding to the complexity is the actual size of the tombs and the amount of material excavated from them, which provides yet another perspective. The following two graphs show the combined size of the tombs during each reign in square meters (figure 19) and cubic meters (figure 20).

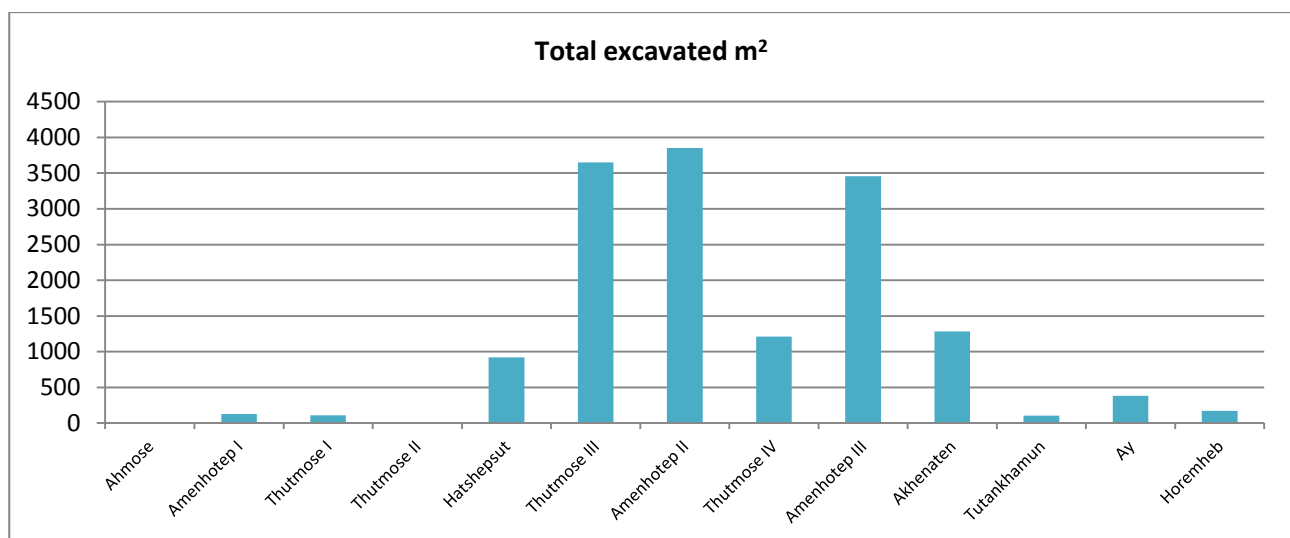


Figure 19 – Excavated size of the Theban private tombs per reign of each king measured in square meters.

⁶³¹ This is based only on the Theban tombs that are included in the statistics and not the ones that I was unable to find material on or the ones which are chronologically uncertain (labelled “18th Dynasty Undefined” in figures 10, 11, and 12).

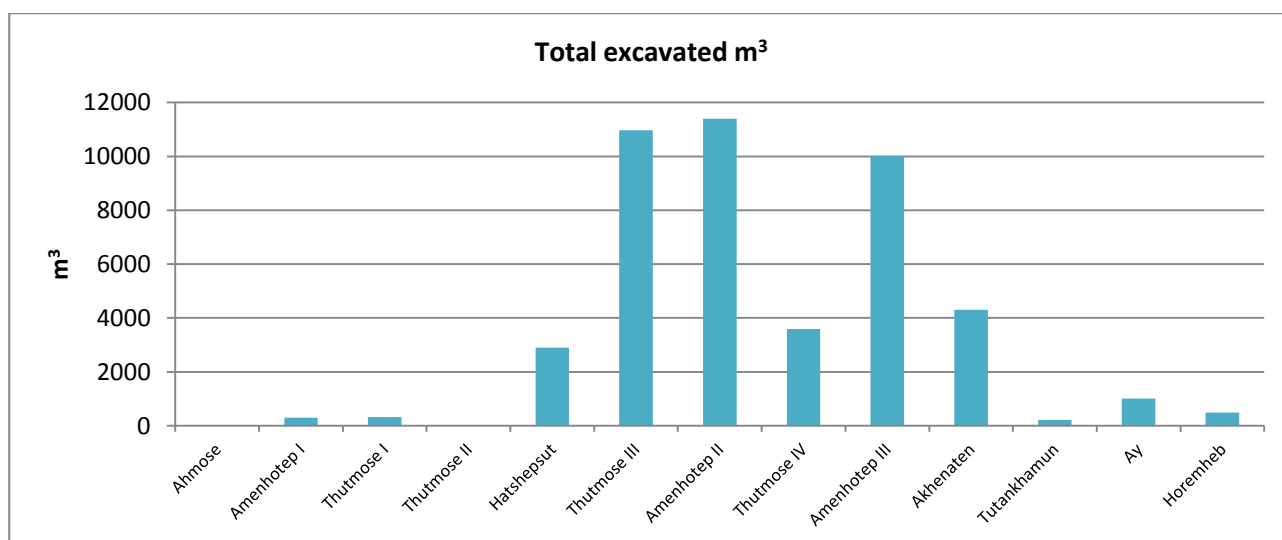


Figure 20 – Excavated size of the Theban private tombs per reign of each king measured in cubic meters.

Comparing figures 19 and 20 show a correlation between the two-dimensional size and the three-dimensional volume in a relation of ca. 1:3, e.g. the relation of Thutmose IV is 1213.4 m^2 : 3594.1 m^3 . Also, the numbers in these two graphs follow the general trend seen in the previous graphs, i.e., the longer the reign, the higher the number. An interesting point to consider here is that although only having 40 tombs credited to his reign, Amenhotep II surpasses both Thutmose III's 57 tombs and Amenhotep III's 42 tombs in size measured in square meters and comes very close to Thutmose III's output in cubic meters. This means that the tombs constructed under Amenhotep II are, on average, larger in area than during the reigns of other kings. Figures 21 and 22 below display the yearly output in square and cubic meters, respectively, and the greatest production output of both graphs was achieved during the reign of Amenhotep II. The high numbers can be explained by assuming a greater construction speed in this period than in the rest of the dynasty.

From figures 19 and 20 and the four tombs in the early reign of Akhenaten, it becomes clear that these are very large compared to those from the reign of other kings. For example, during the reign of Amenhotep II, the average tomb size was around 285 cubic meters ($11403.5 \text{ m}^3/40$ tombs), whereas the average size during Akhenaten's reign was about 1076 m^3 ($4302.3 \text{ m}^3/4$ tombs). As a comparison and to put the size of these private tombs into a wider perspective, it should be mentioned that the tomb of Tutankhamun in the Valley of the Kings is 277 m^3 in size and that of Amenhotep III 1486 m^3 . These two monuments thus represent one of the smallest and one of the largest 18th Dynasty royal tombs, respectively.⁶³²

Turning now to the yearly average output in private tomb production, the following two graphs can be constructed (figures 21 and 22).

⁶³² Both volumes are given by the Theban Mapping Project website (KV62 and KV22).

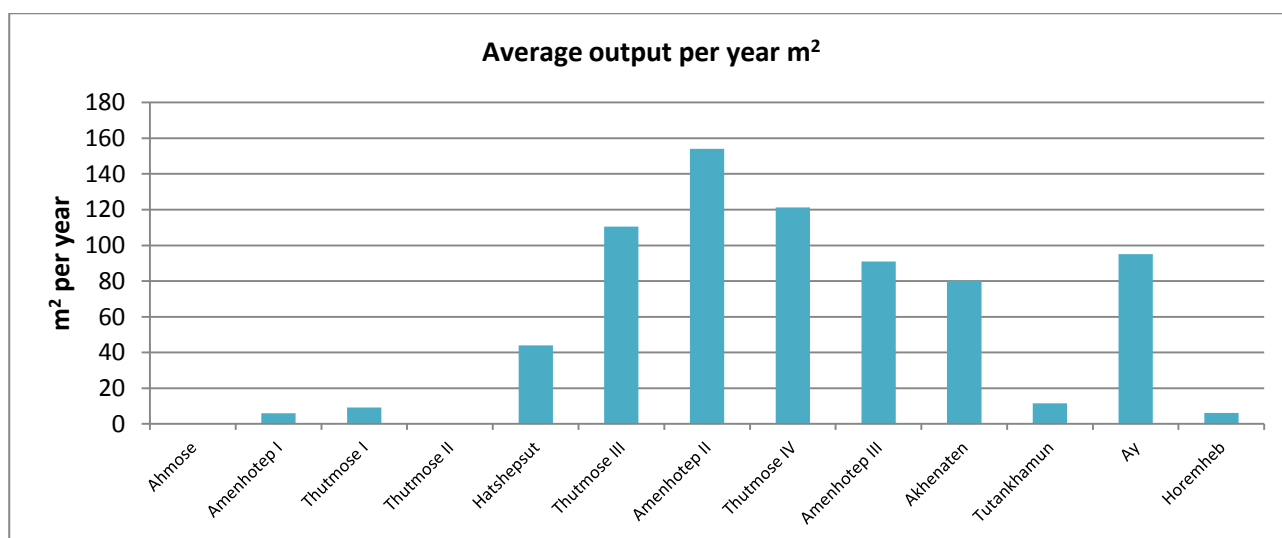


Figure 21 – Average rate of tomb production per reign of each king measured in square meters.

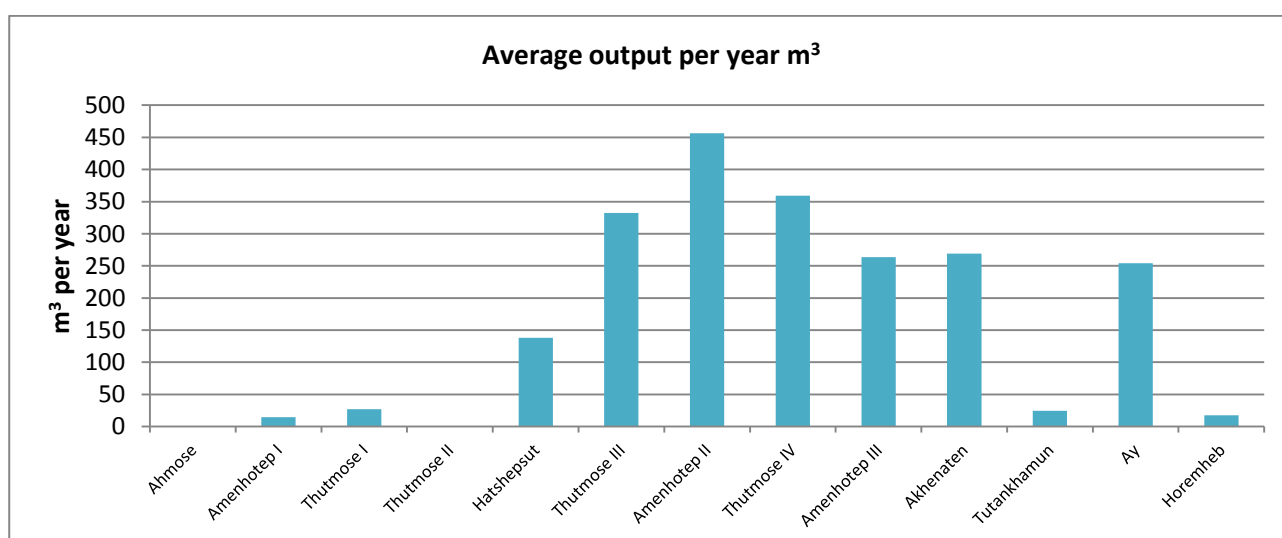


Figure 22 – Average rate of tomb production per reign of each king measured in cubic meters.

As mentioned above, the highest output was produced during the reign of Amenhotep II with 456 cubic meters per year excavated, and the average tomb size for the period was 285 m³ (25 years x 456 m³ / 40 tombs). Thutmose IV had the second highest output in both size and volume, despite having the highest output per year when looking at individual tombs (see figure 12). The average tomb volume for his 10-year reign is 180 m³ (3594.1 m³ / 20 tombs). Looking only at the remaining reigns with an output of more than 100 m³, the average tomb volumes are as follows:⁶³³ Hatshepsut; 290 m³. Thutmose III; 193 m³. Amenhotep III; 238 m³. Akhenaten; 1076 m³. Ay; 508 m³. The disproportionally large average dating to both Akhenaten and Ay is due to the fact that some of the tombs constructed in their reigns were very large indeed, in

⁶³³ These numbers are not visible in any of the diagrams above but are derived at by multiplying the number of years in the reign with the average output per year in cubic meters, and then dividing this with the number of tombs during that particular reign.

particular the tombs of three individuals: Ramose (TT 55; 1963 m³) and Kheruef (TT 192; 2040 m³) during Akhenaten, and Nay (TT 271; 728 m³) under Ay⁶³⁴.

4.1.4 – Problem of assigning tombs to reigns

The dating of the very large tombs of Ramose and Kheruef to the reign of Akhenaten requires explanation. TT 55 and TT 192 were arguably built over a number of years which exceeded those first years of Akhenaten's reign before the move to Amarna occurred. This interpretation is based on the Senenmut case study (see above 3.3) which argues for a construction time of about four or five years for TT 71 in conjunction with the average yearly production rate (or construction scale baseline) of 197.9 m³, calculated in this chapter (see above 4.1.1). The tomb of Kheruef was probably constructed over a period of about 10 years (2040 m³ / 197.9 m³ per year = 10.3 years) and that of Ramose over a similar length of time, based on an average-level construction output (1963 m³ / 197.9 m³ per year = 9.9 years). Based on these calculations and assuming that the workers building the Theban private tombs also moved to Amarna when the new capital was founded,⁶³⁵ it is far more likely that the bulk of construction on TT 55 and TT 192 was conducted during the reign of Amenhotep III. The following two graphs (figures 23 and 24), take this divergence into account and incorporate the volume of both TT 55 and TT 192 into the reign of Amenhotep III. The difference has consequences for the interpretation of the data on a broader scale.

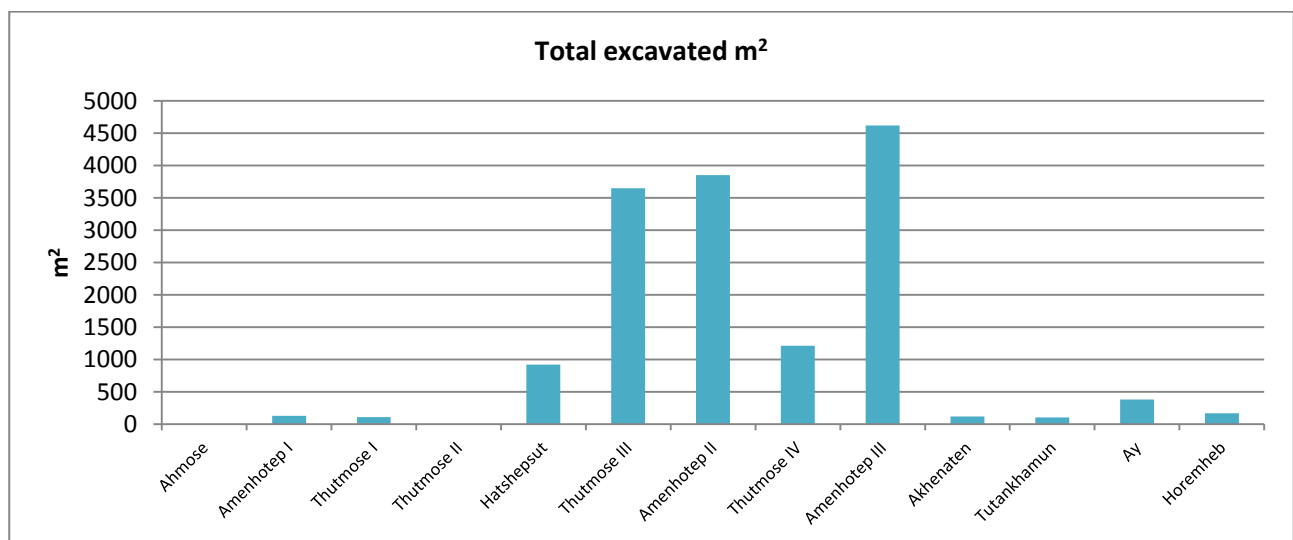


Figure 23 – Excavated size of the Theban private tombs per reign of each king measured in square meters with TT 55 and TT 192 placed in the reign of Amenhotep III.

⁶³⁴ I refer to the volume of the royal tombs mentioned above as comparison.

⁶³⁵ See again Kemp (2012), 17 + 41; Romer (1994), *op. cit.*, 217-218; and M. Müller (2014), "Deir el-Medina in the Dark - the Amarna period in the history of the village", 155.

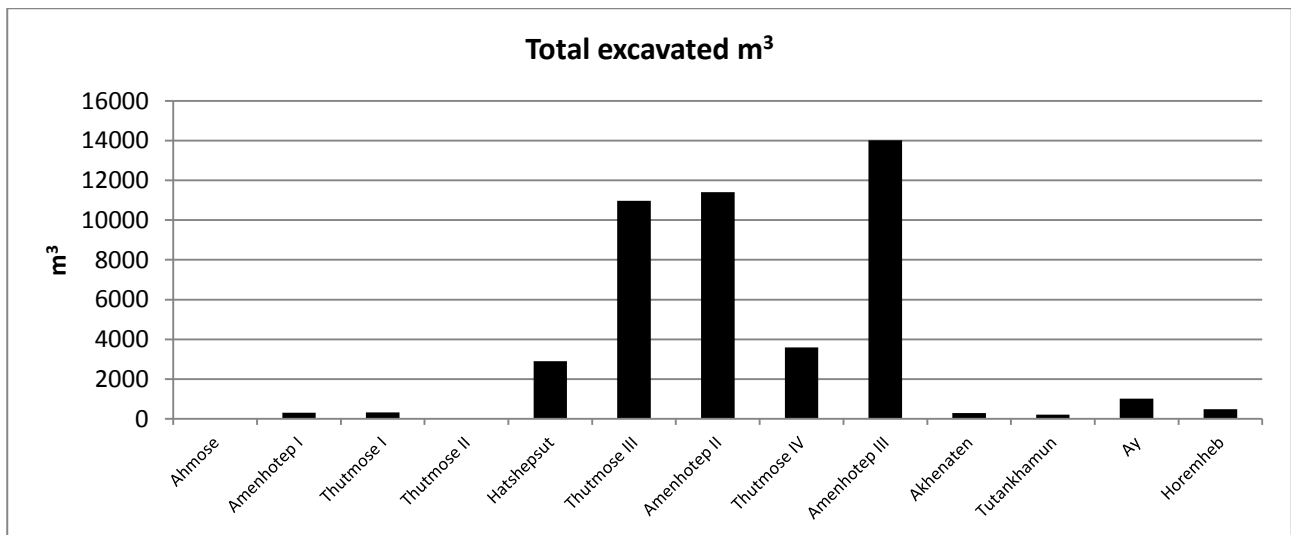


Figure 24 – Excavated size of the Theban private tombs per reign of each king measured in cubic meters with TT 55 and TT 192 placed in the reign of Amenhotep III.

As can be seen when comparing the graphs in figures 23 and 24 to those in figures 19 and 20, the amount of excavated material during the reign of Akhenaten drastically decreases. Similarly, the columns representing the reign of Amenhotep III increase and makes this period the one with the highest excavated volume in the 18th Dynasty. The graphs also show a better correlation between the number of years of the rulers of the middle 18th Dynasty (see figure 10) with the volume excavated during those years. Put differently, Amenhotep III ruled for a longer period and one would expect the excavated volume to be greater during his reign than earlier ones. This is best illustrated by juxtaposing the percentages of length of reign and volume assigned to each king. The pie chart in figure 25 shows the various reigns in percentages of the total 255 years of the 18th Dynasty, while figure 26 shows the volumetric distribution assigned to the reigns in percentages.

18th Dynasty length of reigns in percentages

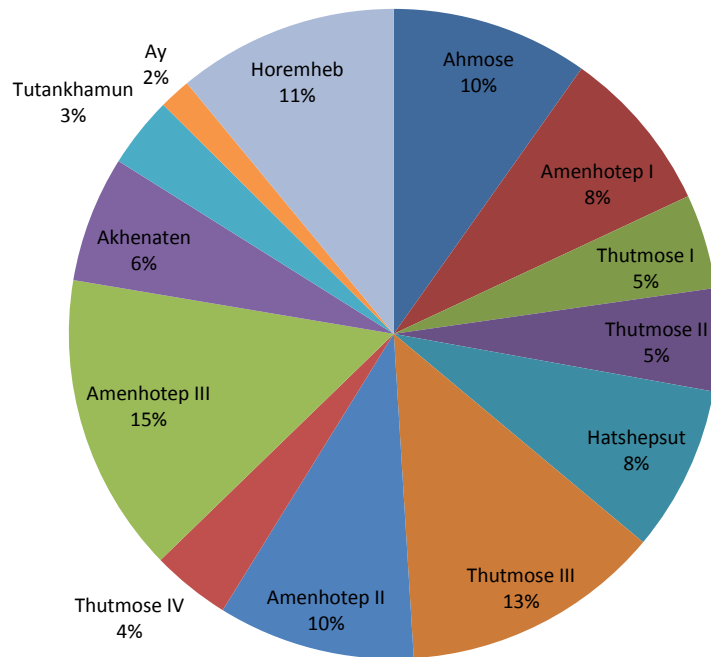


Figure 25 – Percentage of the total length of the 18th Dynasty (255 years) for the reign of each king.

Percentages of excavated m³

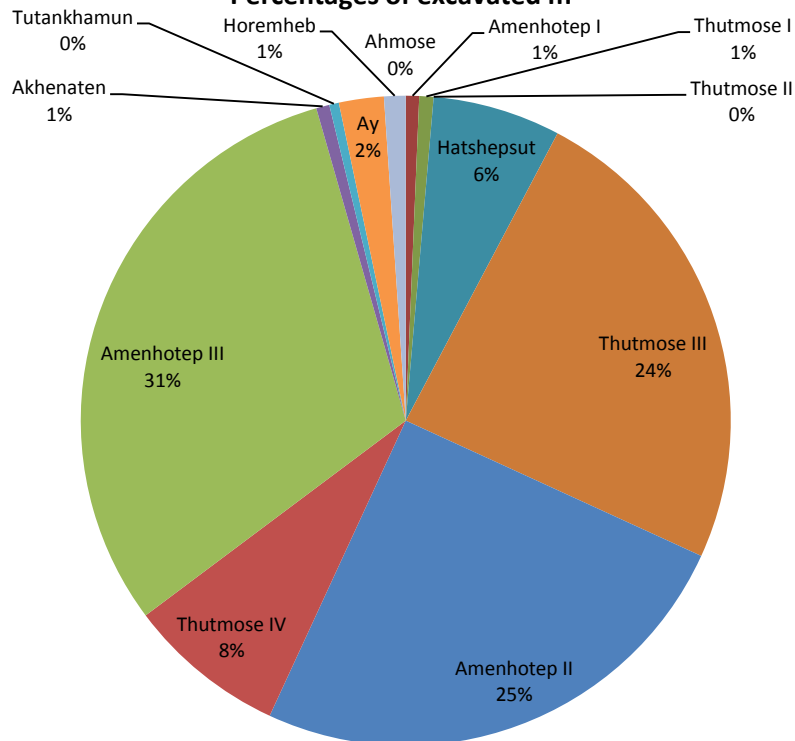


Figure 26 – Percentage of the total excavated volume (50464.09 m³) for the reign of each king.

Comparing the two pie charts reveals that 94% of the construction of Theban private tombs happened in the reigns between Hatshepsut and Amenhotep III (42297.336 m³ of the total 44873.125 m³),⁶³⁶ a period of 127 years, which accounts for 50% of the 255 years of the entire 18th Dynasty. Also observable in the charts is a correlation between the percentages in both figure 25 and 26 for the same five reigns, although Hatshepsut's reign lasted 8% of the period and accounts for 6% of the excavated volume, which is a ratio of less than 1:1. Thutmose III, however, ruled for 13% of the years of the dynasty and has 24% of the volumetric output, i.e. a ratio of very close to 1:2. That ratio for Amenhotep II is almost 1:2.5; for Thutmose IV it is exactly 1:2; and for Amenhotep III also close to 1:2. Because the volumetric value for Amenhotep III and Akhenaten significantly changes when placing TT 55 and TT 192 in the reign of the former rather than that of the latter, the overall impression of the average output per year also changes. This is visualised in figure 27.

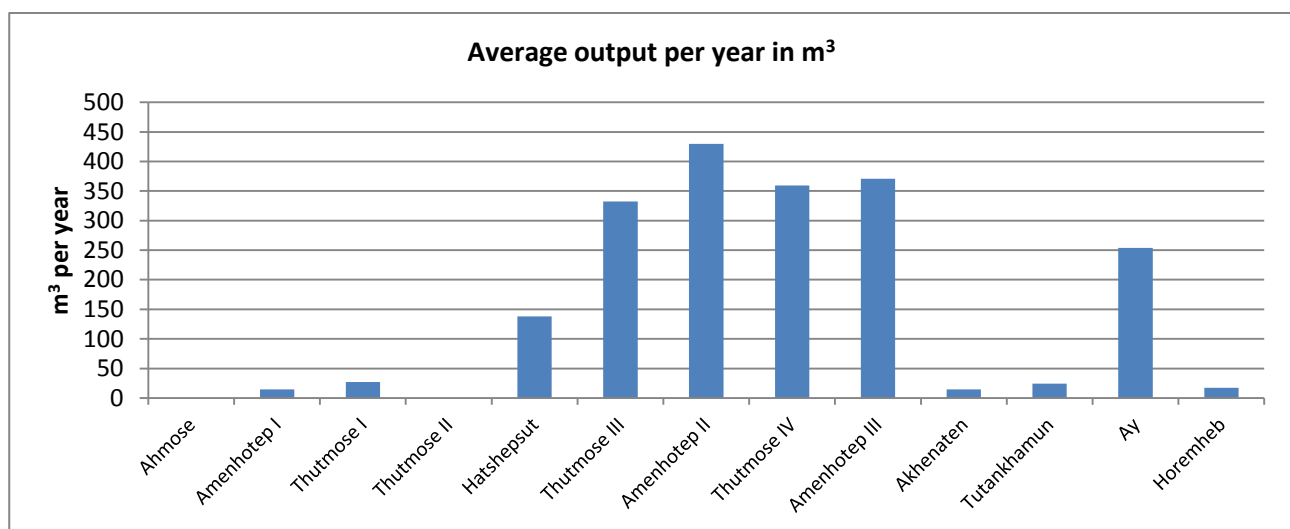


Figure 27 – Average rate of tomb production per reign of each king measured in cubic meters when TT 55 and TT 192 are placed in the reign of Amenhotep III.

When compared to the first diagram of the output of private Theban tombs (figure 22), the changes are the following: The average output during the reign of Amenhotep III climbs from 263.54 m³ per year to 370.73 m³ per year (an increase of 107.19 m³ per year), and similarly decreases during Akhenaten's reign, from 268.89 m³ per year to 14.32 m³ per year. The excavation output during the reigns of the other rulers remains the same.

4.1.5 - Volumetric size of Theban private tombs

The following graph (figure 28) is compiled as a visual representation, distributed over time indicating both the reigns of kings and the longer periods classified as Early, Middle, and Late 18th Dynasty.

⁶³⁶ Excluded from the total is the volume of the 31 tombs (4933.111 m³) that are not assigned a specific reign.

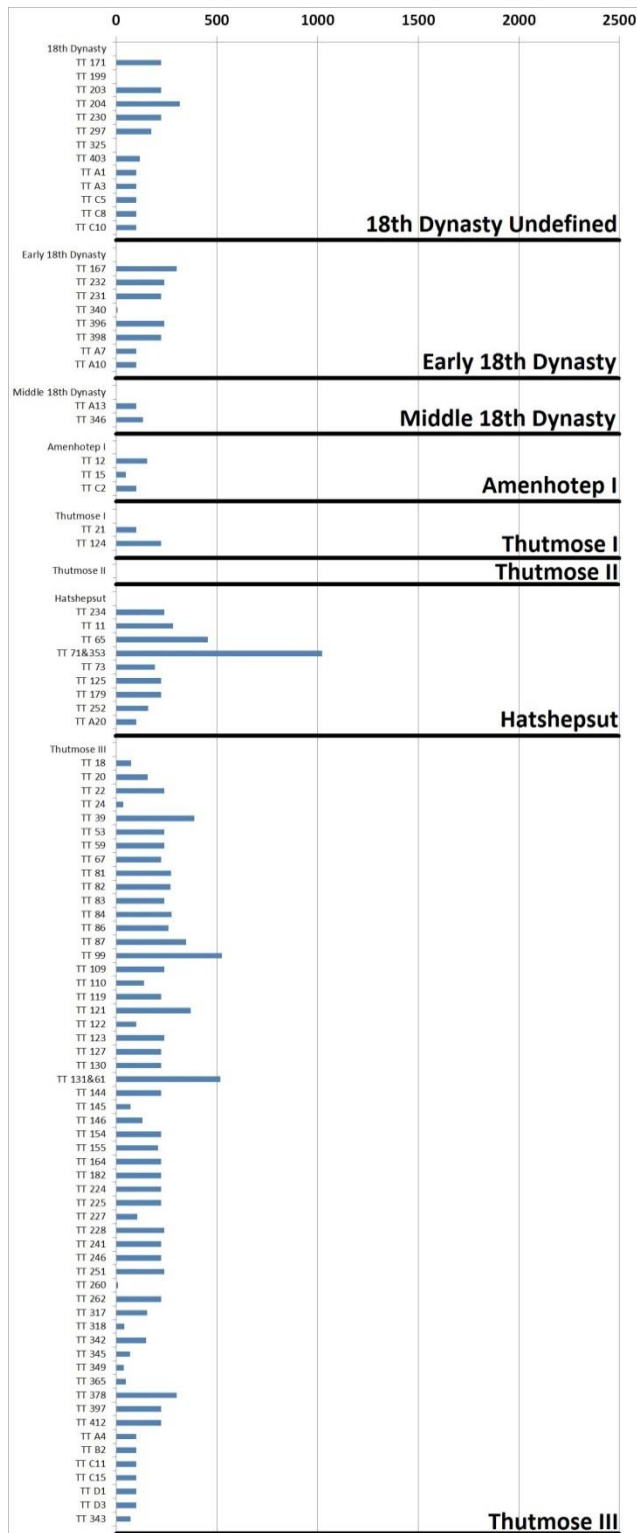
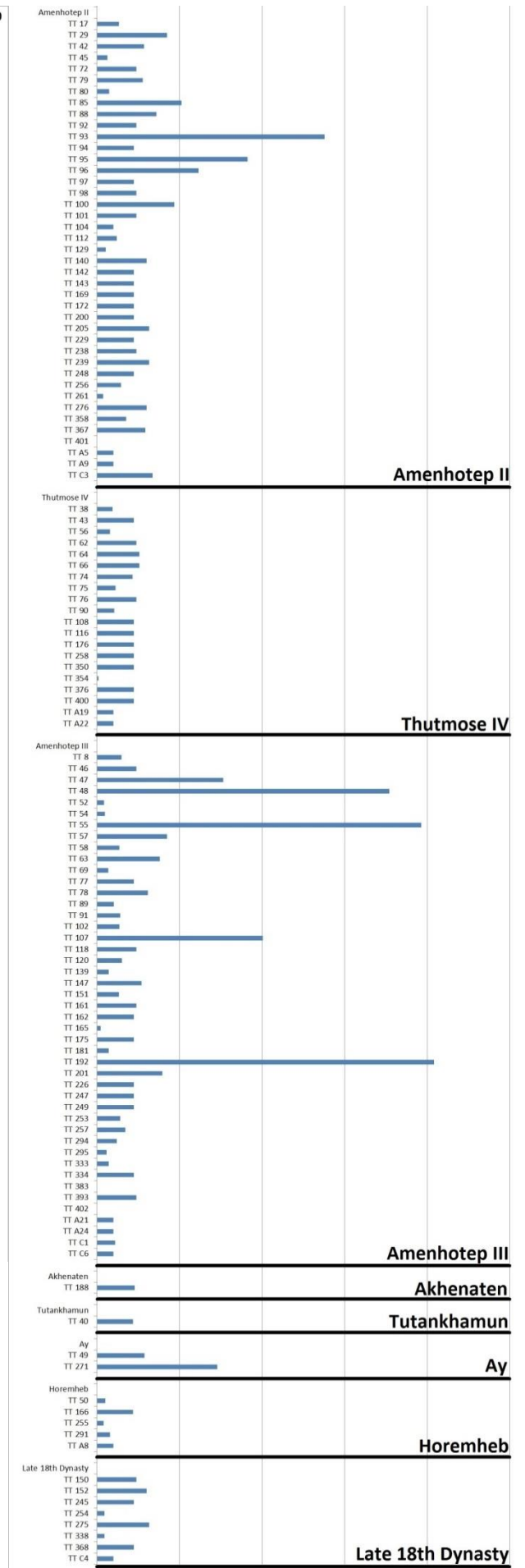


Figure 28 - Volumetric size of the Theban private tombs over time, assigned to the reign of kings, the three overall periods, or the 18th Dynasty when specific diachronic information is missing.



The figure is split in two in order to display the numbers of each individual tomb and its volumetric size more clearly. The division between the reigns of rulers are marked with a line and the name of the ruler. For example, the tombs from the reign of Hatshepsut are displayed in the interval above the name of the ruler. The tombs that cannot be assigned more specifically than to a period within the 18th Dynasty are displayed in the intervals above one of four periods: the 18th Dynasty Undefined (11 tombs that are only dated to the dynasty), the Early (8 tombs), the Middle (2 tombs), or the Late 18th Dynasty (8 tombs). The last three intervals are the same as utilised in figures 16 to 18 above.

The tombs in each interval are not placed chronologically but merely in the sequence that their tomb number logically dictates. For example, in the reign of Thutmose III the tomb of Baki (TT 18) is placed before the tomb of Montuherkhopshuf (TT 20), and that the tomb of Menkhepereseneb (TT 86) is placed immediately before the tomb of Minnakht (TT 87). It should be noted that three of the bars represent the combined volumetric size of two different tombs. This is because the tomb owner had two tombs built which arguably can be seen as one mortuary monument for that person. The tombs and their owners in question are: Senenmut (TT 71 and TT 353) in the reign of Hatshepsut; User-Amun (TT 61 and TT 131) in the reign of Thutmose III; and Djehutynefer (TT 80 and TT 104) in the reign of Amenhotep II.⁶³⁷

The bulk of the tombs do not exceed the first marked interval of 500 m³ and most of them only halfway to this measure. The impression of the figure is thus coherent with the average tomb size of 236.92 m³, which is arrived at by dividing the combined volumetric value with the number of tombs (50464.09 m³ / 213 tombs). The few tombs that have a size beyond the 500 m³ mark, some even beyond the 1000 m³ mark, I label 'super tombs', because they are so much larger than the average tomb size that they and their owners must be considered as special cases.

The 'super tombs' are not clustered together in one or two reigns. If they were, it probably could be explained by a sudden upward surge in Egypt's wealth due to conquest and increased rates of tribute, wealth that eventually reached the officials and courtiers of the king. Such an economic increase conceivably did happen in the reign of Thutmose III, but there is no cluster of 'super tombs' in this period.⁶³⁸ The reign of Amenhotep III does show a tendency towards clustering, which is perhaps explained by the large-scale building programme of the king throughout Egypt. The increase in resources for the purpose of construction also benefitted the king's retinue, who built monuments to rival those of many former rulers.⁶³⁹ If tomb size is an indicator for the economic and political power wielded by the proprietor, then

⁶³⁷ See chapter 3 above (3.1, n. 319) for the reason to not include Menkhepereseneb (TT 86) as an owner of two tombs.

⁶³⁸ From the reign of Hatshepsut, the number of men and the size of their 'super tombs' increases, so the conquest of and tribute from foreign territories is an aspect that must be considered.

⁶³⁹ B. Bryan (2000), "The 18th Dynasty before the Amarna Period", 260.

the status and titles of these five tomb owners, and the owners of the other ‘super tombs’, must be a factor to consider.⁶⁴⁰ To set the size of the ‘super tombs’ into perspective the following figure (figure 29) display the volumetric value of the tombs and the tombs of the rulers to whose reign each tomb is attributed.

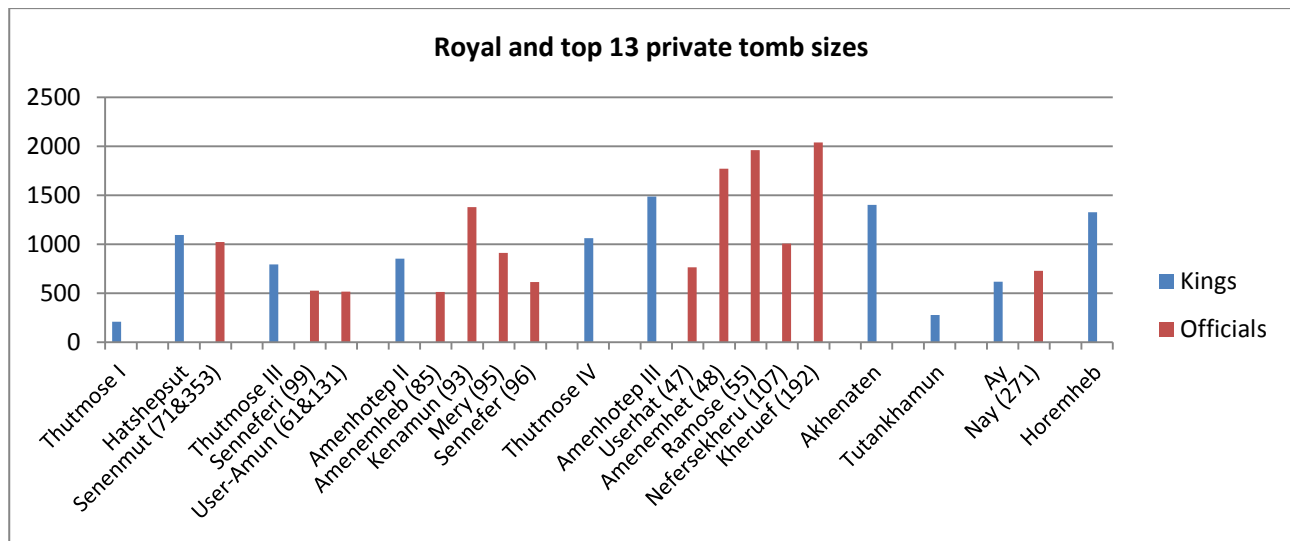


Figure 29 – Volumetric size of the top 13 ‘super tombs’, compared to the royal tombs.

It should be underlined that the above figure is only compiled to juxtapose the size of the ‘super tombs’ with the royal tombs and a direct 1:1 comparison between them should not be attempted. This is because the royal mortuary complex also includes the mortuary temples and various monuments within it or located elsewhere. If a volumetric value for the royal monuments was available, these would dwarf the private tombs, even the large ones. Of course, private people do have other monuments attributed to them, but no private statue comes close to the colossal scale on which the royal statuary is found.

4.2 - ‘Super tombs’ and their owners

Despite its limitations, figure 29 above does reveal some previously unknown and important issues that potentially clarify, at least in part, the structure of economic power at the very top of Egyptian society during the 18th Dynasty. However, the questions of why and how these 13 men built so large tombs are not easily answered.

The decoration and architecture of the tombs possibly hold some of the answers, but an in depth economic and social analysis of these tombs lies beyond the scope of the present thesis. There seems to be an

⁶⁴⁰ For the sake of clarity, I do not equate the size of tomb to the economic or political power of the tomb owner. I am merely pointing out that the tomb size can be an indicator and should only be a starting point from which a comprehensive study of the tomb owners and their social status is examined.

economic difference in whether a tomb is decorated with painting or reliefs, raised or sunk, as the first is presumably relatively easy to execute and the second is comparably difficult and time consuming. A further variable is the skill level of the artist or craftsmen for which the tomb owner would arguably have to pay accordingly. The very large tombs demonstrate, at the very least, the level of ambition found among the 'super tomb' owners when they made their plans and preparations. This ambition was probably rooted in the tomb owners' social and economic status. The economic power of the top 13 tomb owners and their accessibility to resources is revealed by the textual part of the tomb decoration; the titles of the tomb owner. Based on how often and consistently titles occur in Egyptian tombs, the act of inscribing titles seems to have been very important to the ancient Egyptians, and the practice was well established by the time of the New Kingdom.⁶⁴¹ The analysis of titles, however, poses a challenge, as it is not well understood whether they were designations describing actual work and responsibilities or just honorific titles, or even made up by the artisan inscribing the tomb or statues.⁶⁴² The problem deepens when the sheer number of different titles claimed by one individual is taken into account. Senenmut is a good example of this, as he had almost 100 different titles inscribed on his monuments and belongings.⁶⁴³

Despite these challenges, the titles do reveal important affiliations to economic institutions, if not the day-to-day functions and responsibilities covered by each title or the connected monthly remuneration of the individual titleholder. One could assume that the largest tombs belong to the richest and most powerful officials.⁶⁴⁴ Within Egyptology, these are usually considered to be the viziers or high priests of the most important temples. These titles can be found among the top thirteen tombs, but they are not in the majority: only two viziers and only one high priest of Amun are among the tomb owners. This would indicate that other titles or professions came with as much access to resources and manpower as did the abovementioned officials.

A detailed investigation of each title of the tomb owners is also beyond the scope of this thesis. I will here rather look at the titles of the owners of the 13 largest tombs, primarily those titles these tomb owners share and have in common, as this indicates the economic spheres with the most influence and possibly power during the 18th Dynasty. It is the spheres to which the titles belong that are of interest here, but

⁶⁴¹ For comprehensive collections of the titles see: W. Helck (1958), *Zur Verwaltung*; W. A. Ward (1982), *Index of Egyptian Administrative and Religious Titles of the Middle Kingdom*.

⁶⁴² For discussions on the problems of ranking titles, see for example D. Franke (1984b), "Probleme der Arbeit mit altägyptischen Titeln des Mittleren Reiches", *GM* 83, 103-124; K. Baer (1960), *Rank and Title in the Old Kingdom* (particularly pages 9-41). L. Coulon (1997), "Véracité et rhétorique dans les autobiographies égyptiennes de la Première Période Intermédiaire", *BIFAO* 97, 109-138.

⁶⁴³ P. Dorman (1988), *The Monuments of Senenmut*, 203-211.

⁶⁴⁴ As Friederike Kampp-Seyfried pointed out that "it is logical that a higher-ranking person was able to construct a bigger tomb than his subordinate": F. Kampp-Seyfried (2003), "The Theban Necropolis: an overview of topography and tomb development from the Middle Kingdom to the Ramesside period", 3. In N. Strudwick & J. H. Taylor (Eds.) *The Theban Necropolis. Past, Present and Future*, 2-10.

establishing these is also problematic. The problem lies in the division and overlap of the spheres, whether they be political, social, religious, or economic. A divide between the administration of the state and the temples is evident from a range of inscriptions, for example the double-sided stele of Khentykhetyemsaf-(seneb) from the 12th Dynasty now in the Ny Carlsberg Glyptotek (AEIN 1539). Here, the text refers to the ‘offices’ of the temple (*ỉst nb nt ḥwt-ntr*) and the ‘offices’ of the palace (*ỉst nb nt pr-nswt*).⁶⁴⁵ Quirke interprets these offices as having an economic dimension to their functions, as there was a household or estate (*pr*) attached to each *ỉst*.⁶⁴⁶ This economic aspect and the ownership of it, Quirke argues, may have been the most important aspect as perceived by the titleholder in charge, as he would have been more or less free to make use of the resources and manpower as he saw fit.

The modern construct of defining and classifying the universe enables a modern understanding of the past, but a parallel is unlikely to be found in the ancient sources, especially those pertaining to economy. For example, the challenge of dividing and separating out the interests and holdings of the king from those of the state is problematic, as both seem to overlap. “Attempts to map an orderly division of state functions, those of the king personally, and those of the temples lead frequently to blind alleys.”⁶⁴⁷ That does not mean that one should not try to understand the interplay and structure of the titles, but there are many difficulties in defining these.

In 1991, Betsy Bryan proposed the following ordering of the Egyptian administration, based on the titles of officials from the reign of Thutmose IV.⁶⁴⁸ 1. Civil Administration.⁶⁴⁹ 2. Palace Administration.⁶⁵⁰ 3. Religious Administration.⁶⁵¹ 4. Military Administration.⁶⁵²

In 2006, Bryan grouped the various titles of the officials from the reign of Thutmose III into the following and slightly more detailed thematic list:⁶⁵³ - First tier offices of the state⁶⁵⁴ - Second tier offices of the

⁶⁴⁵ Quirke (1986), 109, n. 20.

⁶⁴⁶ Quirke (1986), 108.

⁶⁴⁷ B. Bryan (2006), “Administration in the Reign of Thutmose”, 69.

⁶⁴⁸ B. Bryan (1991), 242-293, and Appendix IV (294-298).

⁶⁴⁹ Includes the ‘Vizierate’, the ‘Overseer of the Treasury’ (*mr ḥtmw*), the ‘Overseer of the Treasury House’ (*mr pr-ḥd-(nbw)*), the ‘Overseer of the granaries’ (*mr šnwty*), the ‘King’s son of Kush’ (*sš nsw n kš*)(?), and the ‘Lesser Officials for central administration’ such as the ‘Overseer of southern countries’ (*mr ḥzswt rswyt*) and ‘Overseer of the Stables’ (*ḥry iḥw*).

⁶⁵⁰ Includes titles such as the ‘Chief Steward’ (*mr pr wr*), the ‘Overseer of the royal household’ (*mr ipt nsw*), the ‘Royal nurses’ (*mr mnꜥt*), the ‘Child of the nursery’ (*ḥrd n kꜣp*), the ‘Royal Herald’ (*wḥm nsw tpy*), the ‘Royal Messenger’ (*wꜣwty nsw*), and the ‘Provincial Governors’ (*ḥꜣty-ꜥ*).

⁶⁵¹ This grouping of titles is mainly associated with the god Amun in Thebes such as ‘High priest of Amun’, ‘Second and Third prophets of Amun’, and ‘Amun Temple Administrators’, e.g. ‘Chief Steward for Amun’s Temple’ (*mr pr n imn*) and ‘Overseer of cattle of Amun’ (*mr kꜣw n imn*). It also includes the titles of ‘High Priest’ for many of the principal gods of Egypt such as Ptah, Montu, Osiris, and Ra.

⁶⁵² The grouping of titles includes ‘General’ (*mr mšꜥw*), ‘Scribe of the Army / Elite Troops’ (*sš mšꜥ / nfrw*), ‘Standard-bearers’ (*tꜣy sꜣyt*), ‘Troop Commander’ (*ḥry pꜣt*), ‘Medjay leader / Chief of the Medjay’ (*ḥry mꜣzyw / wr n mꜣzyw*), ‘Adjutant’ (*idnw*), and ‘Master of horses’ (*mr ssmwt*).

⁶⁵³ Bryan (2006), 70-113.

state⁶⁵⁵ - Palace Administration⁶⁵⁶ - The Regional Administration⁶⁵⁷ - Viceroy of Nubia⁶⁵⁸ - Military Administration⁶⁵⁹ - Religious Administration.⁶⁶⁰ This would seem to indicate differences in the administration and the spheres of influence to which each title belonged, and possibly the kings of the 18th Dynasty actively chose to do things differently than their predecessors.

In 1986, Stephen Quirke compiled a comprehensive list for categorising what he labels 'regular titles' in an effort to order the many designations found in the late Middle Kingdom.⁶⁶¹ He thus sees a division between the Palace (I), the Treasury (II), the Bureau of the Vizier (III), the Bureau of Fields (IV), the Organisation of Labour (V), the Local Administration (VI), and finally the Military (VII). The sphere of the temple administration could be labelled (VIII), but Quirke considers this as being separate a separate sphere and therefore omits it.⁶⁶² Possibly becoming aware of the potential risk of "*imposing an over-systematic framework on the ancient Egyptian evidence*",⁶⁶³ Quirke later modified his grouping into three overall spheres, while retaining many of the former divisions on the sublevels.⁶⁶⁴ These are the Bureaux and spheres of the central administration, which includes the Palace,⁶⁶⁵ the 'White House' (or Treasury),⁶⁶⁶ the Vizier's Office,⁶⁶⁷ and the 'Military', the Local government, and the Temple administration.

Bryan insists on the autonomy of the military sphere of administration, which seems convincing when focusing on the so-called warrior kings of the 18th Dynasty. However, there were conceivably ties to the Palace Administration and/or to the Offices of the state, in particular the Treasury, as the wages and rations for the army were not produced within that military sphere.

⁶⁵⁴ Includes the office of Vizier, the 'Overseer of the Seal', and the 'Overseer of the Granary'.

⁶⁵⁵ Includes the 'Overseer of the Silver and Gold Houses', the 'Overseer of the *Ruyt*', the 'Royal Herald', and the 'Royal Messengers'.

⁶⁵⁶ This sphere includes the 'Chief Steward of the King', the 'Royal Butler', the 'Child of the *Kap*', and the 'Royal Nurse'.

⁶⁵⁷ Includes titles such as the mayor (*h3ty-ꜣ*).

⁶⁵⁸ Bryan (2006), 101-102.

⁶⁵⁹ Includes the 'Overseer of the Army' or 'General'.

⁶⁶⁰ It is not entirely clear whether Bryan indicates a ranking of these spheres or groupings, or if they were ranked on an equal level, presumably under the king. It is also not clear whether the former Civil Administration has only been divided into First and Second tiers of the state or if the Regional Administration was a part of this as well. The Viceroy of Nubia supposedly was part of the Civil Administration, even though Bryan presumably referred to this office as King's son of Kush in her earlier work.

⁶⁶¹ Quirke (1986), 116.

⁶⁶² Quirke (1986), 109.

⁶⁶³ Quirke (2004), 3-4.

⁶⁶⁴ Quirke (2004), 25-131.

⁶⁶⁵ The titles within this group are further subdivided into those referring to the 'Inner Palace', the 'Outer Palace', the 'Palace as an ideological institution', the 'Secretarial staff of the king', and the 'Miscellaneous palace staff'.

⁶⁶⁶ This includes administrative titles referring directly to the 'Treasurer' or alternatively to the 'Treasury (White House)', the 'Notables' associated with the treasurer, the 'High Steward' (managing the estates beyond the palace walls), the 'Provisioning sector', the 'Special commodities', the 'Non-agricultural production', the 'Construction projects and expeditions', and finally also the titles of possible but uncertain association with the treasury.

⁶⁶⁷ These titles include the 'Bureau of the Vizier', the 'Bureau of Fields' (field-measurement), and the 'Bureau of Issuing Workforce and Organising Labour'.

In his later work, Quirke links everything to the central administration apart from the local government and the temples, however, both Bryan and Quirke agree upon a need for and the evidence for a separation of the temples from the state. They also both see an administrative division of the regional, or local, spheres.

The definition of the economic spheres lies in their capacity for self-sufficiency, i.e. being able to function without influence or input from other spheres. This is compatible with the model of 'the Household and the Market', proposed by David C. Snell for Ancient Near Eastern economies (see chapter 1.2.3).⁶⁶⁸ The model allows for a differentiation of available resources to the individual tomb owner and identifies the resources general place of origin. However, this does not mean that the different spheres were independent from each other, quite the contrary, as their interconnectivity on a practical level demonstrates.⁶⁶⁹

4.2.1 - Titles and affiliations

Inspired by the three spheres that Quirke has defined, I differentiate the titles of the 'super tomb' owners into four groups, marked I-IV. The first (I) group contains the honorific titles. The second group (II) covers the titles connected to the king, either through the palace administration, the treasury, the vizierate, or the military. Therefore, group II is further subdivided into four categories signifying (1) personal and (2) financial connections to the king, more general connections to the (3) high administration (including the vizier's office) and to the (4) military. The third group (III) consists of the titles associated with the local governments and regional administrations. The fourth group (IV) comprises the titles with clear connections to temple administration or the religious sphere. Group IV is then subdivided into (1) financial and (2) more general connections to temples.

The following table lists the titles that occur most frequently among the top 13 tomb owners. The table comprises only those titles that occur more than three times to exclude, as far as possible, coincidences in the surviving material.

⁶⁶⁸ Snell (1997), 154.

⁶⁶⁹ H. Papazian (2012), *Domain of pharaoh: the structure and components of the economy of Old Kingdom Egypt*, 34.

Quantity	Title	Translation	Category
13	<i>iri-p^{ct} ḥzty-^c</i>	Hereditary Noble and Count ⁶⁷⁰	(I)
11	<i>sdzwtj-bity</i>	Sealbearer (of the King) (of Lower Egypt) ⁶⁷¹	(I)
10	<i>smr w^{ct}ty</i>	Sole friend (of the King) ⁶⁷²	(I)
5	<i>imy-r pr n nsw</i> ⁶⁷³	Steward of the King ⁶⁷⁴	(II)
5	<i>imy-r zḥwt n imn</i>	Overseer of the Fields of Amun ⁶⁷⁵	(IV)
5	<i>imy-r iḥw n imn</i>	Overseer of Cattle of Amun ⁶⁷⁶	(IV)
5	<i>imy-r šnwtj n imn</i>	Overseer of the Granary of Amun ⁶⁷⁷	(IV)
4	<i>ḥry-tp ʿz m pr-nsw</i> ⁶⁷⁸	Great Chief in the Palace ⁶⁷⁹	(II)
3	<i>ṯzy-ḥw ḥr wnmṯ n nsw</i>	Fan-bearer on the Right Side of the King ⁶⁸⁰	(I)
3	<i>imy-r sdzwt</i>	Overseer of the Seal ⁶⁸¹	(II)
3	<i>imy-r pr wr n nsw</i> ⁶⁸²	Chief Steward of the King ⁶⁸³	(II)
3	<i>imy-r pr</i>	Steward ⁶⁸⁴	(III)
3	<i>imy-r pr n imn</i>	Steward of Amun ⁶⁸⁵	(IV)

Table 5 - The shared titles of the ‘super tomb’ owners. Quantity refers to the number of men with the title attested. Category refers to the groups outlined above.

The quantity column in the table lists the number of the top 13 tomb owners who are attested with the corresponding title. For example, all 13 hold the title “Hereditary Noble and Count”, but only three were “Chief Steward of the king”. The second to last entry in table 5, Steward (*imy-r pr*), does occur three times among the ‘super tomb’ owners, but there is a chance that it might have been used as an abbreviation for other titles, for example, Steward of the King. Where the title of Steward is found, it is not further described as referring to a specific person, god, region, or city and has therefore been included in the table as belonging to the local or regional category. Not being defined further is typical of the group of titles in category III. Disregarding these titles and the honorific titles of category I, and focusing only on categories II

⁶⁷⁰ The title is attested for all 13 ‘super tomb’ owners.

⁶⁷¹ Except for Userhat (TT 47) and Nay (TT 271) the title is attested for all officials of the ‘super tomb’ group.

⁶⁷² Attested for Senenmut (TT 71 & TT 353), Kheruef (TT 192), Ramose (TT 55), Amenemhet (TT 48), Kenamun (TT 93), Sennefer (TT 96), Senneferi (TT 99), Nefersekheru (TT 107), User-Amun (TT 61 and TT 131), and Amenemheb (TT 85).

⁶⁷³ Includes the specific ‘Steward of the Estate of Nebmaatre’ (Amenhotep III) (*imy-r pr n pr nb-mz^{ct}-r^c*) and ‘Steward of the lord of the Two Lands Djeserkare’ (Amenhotep I) (*imy-r pr n nb t3.wy dsr-k3-r^c*).

⁶⁷⁴ Amenemhet (TT 48), Nefersekheru (TT 107), Senenmut (TT 71 & TT 353), Sennefer (TT 96), and Senneferi (TT 99).

⁶⁷⁵ Amenemhet (TT 48), Mery (TT 95), Senenmut (TT 71 & TT 353), Sennefer (TT 96), and Senneferi (TT 99).

⁶⁷⁶ Amenemhet (TT 48), Kenamun (TT 93), Nefersekheru (TT 107), Sennefer (TT 96), and Mery (TT 95).

⁶⁷⁷ Nefersekheru (TT 107), Mery (TT 95), Sennefer (TT 96), Senenmut (TT 71 and TT 353), User-Amun (TT 61 & TT 131).

⁶⁷⁸ Includes the ‘Great (one) in the Palace’ (*ʿz m pr nsw*)

⁶⁷⁹ The title is attested for Amenemhet (TT 48), Senenmut (TT 71 & TT 353), Senneferi (TT 99), and Amenemheb (TT 85).

⁶⁸⁰ Attested for Amenemhet (TT 48), Kenamun (TT 93), and Nay (TT 271).

⁶⁸¹ Senenmut (TT 71 and TT 353), Senneferi (TT 99), and Kheruef (TT 192).

⁶⁸² Includes the ‘Chief Steward of the King in Perunefer’ (*imy-r pr wr n nsw n prw-nfr*) – occurs along the regular title in the tomb of Kenamun (TT 93).

⁶⁸³ Attested for Amenemhet (TT 48), Kenamun (TT 93), and Senenmut (TT 71 & TT 353).

⁶⁸⁴ Senenmut (TT 71 and TT 353), Nefersekheru (TT 107), and Kheruef (TT 192).

⁶⁸⁵ Senenmut (TT 71 and TT 353), Mery (TT 95), and Sennefer (TT 96).

and IV, there is almost an equal distribution between the two groups, but with a slight bias towards the temple administration (18 instances with temple-related titles as opposed to 15 occurrences with palace-related titles).

The eight titles labelled in categories II and IV in table 5 are the most frequent among the top 13 tomb owners, but not all 13 tomb owners hold these economic and administrative titles. For example, Ramose (TT 55) does not claim any of the shared titles and neither do Userhat (TT 47) or Nay (TT 271). The eight titles are thus used by 10 of the 13 tomb owners of which one man, Senenmut, claim no less than six titles.

From this, we can deduce that claiming titles related to the palace sphere did not exclude the possession of titles in the temple sphere. For example, Senneferi (TT 99) claimed to be both Great Chief and Steward, but also Overseer of the Fields of Amun, Kenamun (TT 93) claimed to be Chief Steward of the King and Overseer of the Cattle of Amun, and Sennefer (TT 96) claimed the title of ‘Steward of the Lord of the Two Lands Djoserkare’ (Amenhotep I) and Steward of Amun, as well as Overseer of the same god’s Fields, Cattle, and Granary. As an illustrative example of the overlap between the palace and temple spheres, Senneferi (TT 99) claims in his autobiographical text in his tomb,⁶⁸⁶ that he was brought to Thebes, most likely from Heliopolis,⁶⁸⁷ and given the title of Overseer of Granaries (*imy-r šnwtj*), possibly because he was already a Treasurer (*imy-r sd3wt*). At the same time, he was made Overseer of the Fields of Amun, demonstrating the practical approach to the relationship and overlap of the different economic spheres. This was likely based as much on personal connections as on a desired set of skills. While the economic spheres theoretically were self-sufficient,⁶⁸⁸ they did overlap, especially among the people who were in charge.

The conclusion is that it was not the sphere in which the officials claimed titles and responsibilities that determined the size of their tombs, but rather the ability to combine and (re-)organise the resources and manpower within that sphere, and the use of these in combination with those of the other spheres. The next step is to verify this by examining the connections that the owners of the ‘super tombs’ had, and this can only be done through a study of their other titles. In the following, I therefore discuss each of the top 13 tomb owners and their titles that have an affiliation to the different branches of the economy and administration. The tomb owners are listed chronologically, in accordance with figure 29 above, following the general tendency of enlargement of the ‘super tombs’. The titles are added a roman numeral according to their economic sphere described in table 5 above and are subdivided with numbers to show their specific relation within that sphere. This relation is meant as a grouping rather than a ranking, even though

⁶⁸⁶ Urk. IV, 529-531.

⁶⁸⁷ At least, he claims the indicative titles of ‘Festival leader of all the gods of Heliopolis’ (*sšm ḥb n ntrw nb iwnw*) (Urk. IV, 541) and ‘Festival leader for Atum’ (*sšm ḥb n itm*) (Urk. IV, 536).

⁶⁸⁸ Haring (1997), 3.

some titles presumably did outrank others. Each title is further described as they are encountered in the chronological order of the tomb owners.

4.2.2 - Senenmut (TT 71 and TT 353)

The first 'super tomb' owner of the 18th Dynasty was Senenmut who had two tombs built, TT 71 and TT 353 (see chapter 3). The honorific titles of Senenmut include the three shared titles that are the most numerous among the top 13 men and are as follows:

iri-p^ct h₃ty-^c (I) – Hereditary Noble and Count.⁶⁸⁹ This title, technically made up of two separate titles,⁶⁹⁰ was an honorific designation the purpose or meaning of which is not completely understood. The title is already attested in the Old and Middle Kingdoms where it occurred in a string combination with other titles, particularly the *sd₃wty-bity* and *smr w^cty*.⁶⁹¹ Quirke argues that “*the context determines functional significance and character of a title*”, and that the title of *h₃ty-^c* by itself and in close proximity of the personal name denotes the principal non-military authority of a town (e.g. mayor), but in a sequence of titles, it simply establishes general nobility or authority of the individual it describes.⁶⁹²

sd₃wty-bity (I) – Sealbearer (of the King) of Lower Egypt.⁶⁹³ Quirke considers the title of *sd₃wty-bity* (or *htmty bity*) as being more than honorific,⁶⁹⁴ but because it was used for multiple spheres of duties and is prefixed a range of different title sequences, it is difficult to capture the precise meaning, and Quirke thus translates it simply as “sealbearer of the (reigning) king”.⁶⁹⁵ He does, however, underline that this prefix-title was used by the highest officials of state, except for the vizier, who is ranked immediately above.⁶⁹⁶ This is not the

⁶⁸⁹ See for example the translations of: Gardiner (1957), 578 (*r-p^ct*): “prince, hereditary prince” + 580: (*h₃ty-^c*) “local prince, mayor”. Faulkner (1962), 162 (*h₃ty-^c*): “local prince, nomarch, mayor”. Erman & Grapow (1971), II, 415 (*rp^c.t*): “Fürst, Gaufürst, Prinzen,” + III, 25 (*h₃ty-^c*): “Graf, Fürst”. Lesko (1984), 49 (*r-p^ct*): “crown prince, prince, hereditary noble” + 95 (*h₃ty-^c*): “mayor, prince”. Hannig (2006), 95: “Prinzregent und Reichsgraf; Erbfürst”. For remarks on the title see for example: Ward (1982), 102 (854): “Prince and Count”. Jones (2000), 315 (1157) (*iri-p^ct*): “hereditary prince/nobleman, ‘keeper of the patricians’” + 496 (1858) (*h₃ty-^c*): “count”. Al-Ayedi (2006), 294-303 (1019): “Prince and Mayor”.

⁶⁹⁰ Both of which are labelled by Franke as ‘Rangtitel 1. Klasse’. D. Franke (1984a), *Personendaten aus dem Mittleren Reich* (20. – 16. Jahrhundert v. Chr.), Ägyptologischen Abhandlungen 41, 13.

⁶⁹¹ For the Old Kingdom evidence see: Baer (1960), 199.

⁶⁹² Quirke (1990), 69 n. 23.

⁶⁹³ See for example the translations of: Faulkner (1962), 258: “seal-bearer of the King of Lower Egypt”. Erman & Grapow (1971), I, 435: “Oft in dem alten Titel vornehmsten Personen”. Lesko (1984), 124: “Sealbearer of Lower Egypt”. Hannig (2006), 675: “Kronsigelbewahrer, Siegelbewahrer des Königs von Unterägypten (dritthöchster Hofrangtitel)”. For remarks on the title, see for example: Ward (1982), 170 (1472): “Sealer of the King of Lower Egypt” (Ward also gives references for the title in connection with other titles: see entries; 855; 856; 881; 1474; 1475; 1476; 1476a). Jones (2000), 763 (2775): “sealer of the King of Lower Egypt”. Al-Ayedi (2006), 453-457 (1566): “Royal seal-bearer”. See also Uphill, Eric P. (1975), “The Office *sd₃wty bity*”. In *Journal of Egyptian Archaeology* 61, 250.

⁶⁹⁴ Franke labels it as ‘Rangtitel 2. Klasse’, i.e. of lower status than the *iri-p^ct* and the *h₃ty-^c*. Franke (1984a), 13.

⁶⁹⁵ Quirke (1986), 123.

⁶⁹⁶ Quirke (1990), 61-62.

case in the New Kingdom, where two of the ‘super tomb’ owners, Ramose and User-Amun, are credited with both the title of Sealbearer (of the King) of Lower Egypt and Vizier.⁶⁹⁷

smr wꜣty (I) – Sole friend (of the king).⁶⁹⁸ The precise meaning of this title is difficult to ascertain.⁶⁹⁹ It is used in many tombs and on countless other monuments of officials from all periods of Egyptian history, which make the translation of ‘Sole Friend’ of the king rather moot. The title had meaning not as ‘friend’ but possibly more in the sense of ‘unique courtier’. The title is honorific in nature and often occurs accompanying one or more of the three honorific titles mentioned above.⁷⁰⁰ These four titles occurring in the present order (*iri-pꜣt*, *ḥꜣty-ꜣ*, *sdꜣwty-bity*, and *smr wꜣty*), has been labelled as non-functional,⁷⁰¹ as the sequence has been attested since the 5th Dynasty⁷⁰² and as such should be considered canonical in nature.

The titles that in some way show Senenmut’s personal relation to the king are possibly many,⁷⁰³ but the one that presumably put him in regular contact with the ruler was the function he had with the title *ḥry-tp ꜣꜣ m pr-nsw* (II.1) – Great Chief in the Palace.⁷⁰⁴ The first part of the title (*ḥry-tp ꜣꜣ*) was in the Middle Kingdom used for the designation of Nomarchs. This is not the case here where the second part has been added, which links it to the royal or palace sphere of the economy. This title was in the 18th Dynasty probably much the same as the title of ‘Butler in the Palace’ (*wꜣpw m stꜣ-sꜣ*) attested for Nebamun, the owner of TT 24, who was also ‘Steward of the Royal Wife Nebtu’ (*imy-r pr n ḥmt nswt Nbtw*),⁷⁰⁵ a secondary wife of Thutmose III. Nebamun possibly possessed a skillset that could be utilised in both the palace and the estate of Nebtu, probably as an administrator in some capacity, but also capable of representing the king.⁷⁰⁶ The similarity between the ‘butler’ and the ‘great chief’ both being ‘in the palace’ suggest similar tasks. Both are possibly comparable to the modern designations ‘private secretary’ or even ‘White House Chief of Staff’, which involves many areas of management, but not necessarily formalised in writing. As chief of staff in the

⁶⁹⁷ Nakhtpaaten, owner of Amarna Tomb 12, is also credited with both titles.

⁶⁹⁸ See for example the translations of: Faulkner (1962), 229: “Sole Friend”. Erman & Grapow (1971), I, 278: “einziger Freund”. Lesko (1984), xx: “xx”. Hannig (2006), 766: “Einziger Freund, Einzigartiger Freund (vierthöchster Hofrangtitel)”. For remarks on the title and further references, see for example: Ward (1982), 151 (1299): “Sole Friend”. Jones (2000), 892 (3268): “sole companion”. Al-Ayedi (2006), 493-496 (1675): “Sole companion”.

⁶⁹⁹ It is labelled by Franke (1984a, 13) as ‘Rangtitel 2. Klasse’.

⁷⁰⁰ See for example Strudwick (2016), 9.

⁷⁰¹ Quirke (1990), 69 n. 23.

⁷⁰² Baer (1960), 199.

⁷⁰³ For what I consider the most important titles of Senenmut in relation to the construction of his tombs, see also chapter 3.5.3 above.

⁷⁰⁴ For further references see: Al-Ayedi (2006), 423 (1442): “Great chief in the palace”.

⁷⁰⁵ Cf. Urk. IV, 152-153.

⁷⁰⁶ See for example Bryan (2006), 95.

royal house, or Great One in the Palace, Senenmut would arguably have had direct access to the monarch on a regular basis.⁷⁰⁷

The next grouping of titles shows Senenmut's financial relation to the king and the areas he was managing. The first title is *imy-r pr wr n nsw* (II.2) – Chief Steward of the king.⁷⁰⁸ The first part of this title (*imy-r*) is usually translated as 'Overseer': a person with overall responsibilities for the daily workings of a given institution, including financial aspects.⁷⁰⁹ The literal translation in this case is 'Overseer of the Great House of the King' but is usually understood as 'Great Overseer of the House of the King'. In either case, the House is to be understood as much as the household or estate of the king as the physical building(s) and probably covers multiple estates and royal buildings throughout Egypt. It certainly covers the entirety of a local area as seen in the case of Kenamun, who was Chief Steward in Perunefer,⁷¹⁰ the port town or area of Memphis⁷¹¹ or Tell el-Dab'a.⁷¹² The function of the titleholder is most likely the overseeing of the personnel and the overall fiscal aspects, i.e. the planning and execution of various HR and financial strategies both on the long and short term, on behalf of the king.

The next title of the group is the *imy-r pr n nsw* (II.2) – Steward of the king.⁷¹³ Unlike the Chief Steward, this title seems to cover a specific department or building of the royal household on a more localised level. The lower level of the administration is seen in the case of Nefersekheru who was Steward of the Estate of Nebmaatre (Amenhotep III) (*imy-r pr n pr nb-m3't-r*).⁷¹⁴ The reference to the named estate, or household, demonstrates that this specific example had a Steward in charge, but also suggests that most estates in New Kingdom Egypt would have had a person with that title appointed. This explains to some degree why

⁷⁰⁷ To determine whether such access also meant that Senenmut could and did take advantage of it for personal gain is difficult.

⁷⁰⁸ See for example the translation of: Hannig (2006), 59: "Oberhaushofmeister, Oberdomänenverwalter, Oberdomänenvorsteher, Majordomus, Hausmeier, Hausminister - des Königs". For references on the title, see for example Al-Ayedi (2006), 39-40: "High steward of the king".

⁷⁰⁹ Helck designates the *imy-r* as being a "Vermögensverwalter". Helck (1958), 157.

⁷¹⁰ Davies (1930), 12.

⁷¹¹ Glanville (1932), "Records of a Royal Dockyard of the Time of Tuthmosis III (Part II)". In ZÄS 68, 7-41; Eyre (1987b), 196.

⁷¹² Cf. Jeffreys (2006) "Perunefer: at Memphis or Avaris?". In *Egyptian Archaeology* 28, 36-37; Bietak (2009), "Perunefer: an update". In *Egyptian Archaeology* 35, 16-17; Schiller (2013), "On the Administration and Organization of Harbors in the New Kingdom". In *Journal of the Society for the Study of Egyptian Antiquities* 39 2012-13, 211; Forstner-Müller (2014), "Avaris, its harbours and the Perunefer problem". In *Egyptian Archaeology* 45, 32-35; Bietak (2017), "Harbours and Coastal Military Bases in Egypt in the Second Millennium B.C.". In H. Willems & J-M. Dahms (Eds.) *The Nile: Natural and Cultural Landscape in Egypt*, Mainz Historical Cultural Sciences, Volume 36, 57.

⁷¹³ See for example the translation of Hannig (2006), 59: "Vorsteher des Königshauses". For remarks on the title and further references, see for example Ward (1982), 24 (153): "Overseer of the Palace". Al-Ayedi (2006), 51 (172): "Steward of the king".

⁷¹⁴ This example also demonstrates that the translation of *imy-r pr* to Steward is a valid one, as the word *pr* is clearly written twice and that a direct translation does not seem convincing: 'Overseer of the House of the House of Nebmaatre'.

so many officials claim the title, as both old and newly founded estates would require a person in charge of the daily running.

The following two titles of Senenmut are not part of the shared titles listed in table 5. They are, however, still within the grouping that had a financial relation to the king and are in essence a subgroup that deals with monument building: First is *imy-r k3t nb(t) nt nsw* (II.2)⁷¹⁵ – Overseer of all Works of the King,⁷¹⁶ and second *imy-r k3t nbt nt nsw m pr-imn* (II.2) – Overseer of all Works of the King in the Temple of Amun. The latter title demonstrates the overlap that existed between the palace and the temple spheres, as it is not entirely clear who the employer was.⁷¹⁷ It could be either the temple of Amun or the king, but in reality, the difference was most likely minor. The two titles would, however, have put Senenmut in charge of a large contingent of workers, both skilled craftsmen and unskilled labourers, including the foremen and lower administrators.⁷¹⁸ The unknown factor is for how long he held the title. As Chris Eyre argues, the title was not associated with a particular office in the structure of the state, but was more likely a description of specific functions performed while in a position of authority through a different office.⁷¹⁹ An example of this time-limited entitlement is a contemporary of Senenmut, the owner of TT 73 Amenhotep, who was called Overseer of Works on the Two Great Obelisks in the Temple of Amun (*imy-r k3wt hr n3 n thnwy wrwy m pr imn*) while also being the Chief Steward (*imy-r pr wr*) and a Veteran of the King (*kn n nsw*). This specified work would presumably have been for a demarcated period of time and Amenhotep would have resumed his regular duties as Chief Steward once Hatshepsut's obelisks had been delivered.

Senenmut's connections to the vizier's office or high administration are significant. He claimed the shared title of Overseer of the Seal (*imy-r sd3wt* (II.3)),⁷²⁰ a very highly placed official within the royal palace and one that theoretically put Senenmut in daily contact with the vizier. Guido P. F. van den Boorn suggests that the Overseer of the Seal was the co-director of the palace,⁷²¹ exchanging daily reports and opening the storehouses and access to the palace with the vizier. The responsibilities of the titleholder seem to have changed during and after the reign of Amenhotep II, where much of the management of the palace was increasingly taken over by the Chief Steward.⁷²² The Overseer of the Seal was according to Betsy Bryan possibly the direct superior of the Overseer of the Silver and Gold Houses (*imy-r pr.wy-ḥd pr.wy-nbw*

⁷¹⁵ A variation of the title is the *imy-r k3t-nsw nbt* – Overseer of all royal works.

⁷¹⁶ Djehuty, the owner of TT 11, is also attested with this title – see chapter 3.5.2.2 above.

⁷¹⁷ There was presumably a great deal of undefined mobility and flexibility connected to the title and the precise functions could vary from one titleholder to another. Cf. S. Katary (2013), "The Administration of Institutional Agriculture in the New Kingdom", 729-730.

⁷¹⁸ For a discussion and interpretation of the title *imy-r k3t* and *imy-r k3t nbt nt nsw* in the Old Kingdom cf. N. Strudwick (1985), *The Administration of Egypt in the Old Kingdom. The Highest Titles and their Holders*, chapter 5: "The Overseers of Works".

⁷¹⁹ Eyre (1987b), 190.

⁷²⁰ A variation or specification of the title which Senenmut also carries is Overseer of all Seals (*imy-r sd3wt nbt*).

⁷²¹ G. P. F. van den Boorn (1988), *The Duties of the Vizier. Civil Administration in the Early New Kingdom*, 61-62.

⁷²² Van den Boorn (1988), 61.

(II.3)),⁷²³ effectively the person in charge of the royal or state treasury and magazines.⁷²⁴ The title is often divided into two: Overseer of the Silver Houses and Overseer of the Gold Houses.⁷²⁵ As Senenmut is also attested with all three versions of the latter title, this might be attributed to an earlier stage of his career, and, if Bryan is correct, counter the argument put forward by Christine Meyer that Overseer of the Seal was the first civil office after his supposed military career.⁷²⁶ Furthermore, he is attested as an Overseer of the Amory (*imy-r pr ḥꜣw* (II.4)) on two of the name stones.⁷²⁷ Senenmut is further attested as unspecified Chief Steward (*imy-r pr wr*) and Steward (*imy-r pr*), which arguably meant that he was in charge of the daily workings of various estates around the country that were not directly under the king's authority.⁷²⁸

Senenmut's connections to the temples, and especially the temple of Amun in Karnak, are in many instances indicated by his titles that have a financial or managerial aspect to them and which to a certain degree mirror the titles he held in connections with the palace. Senenmut is thus both Chief Steward of Amun (*imy-r pr wr n imn* (IV.1)) and Steward of Amun (*imy-r pr n imn* (IV.1)), which probably entailed the same duties and obligations towards the god's estate as the titles described above did toward the king. The same situation is arguably found with Senenmut's titles as Overseer of the Silver Houses of Amun (*imy-r pr.wy-ḥꜣ n imn* (IV.1)) and Overseer of the Gold Houses of Amun (*imy-r pr.wy-nbw n imn* (IV.1)). As Overseer of Works of Amun (*imy-r kꜣt n imn* (IV.1)), Senenmut would presumably have been in charge of the workmen in Karnak, but it is less clear what his title as Overseer of Works of Amun in Djeser-Djeseru (*imy-r kꜣt n imn m ḏsr-ḏsrw* (IV.1)) entailed. In any case, it complements and mirrors his position as Overseer of all Works of the King in the Temple of Amun and shows the overlap between temple and palace.

Two of the next three titles of Senenmut are among the shared titles of the top 13 tomb owners. As Overseer of the Fields of Amun (*imy-r ꜥḥwt n imn* (IV.1)),⁷²⁹ he would have been in charge of the planting and harvesting of crops.⁷³⁰ Combined with his title as Overseer of the Granary of Amun (*imy-r šnwty n imn* (IV.1)),⁷³¹ Senenmut would have also been responsible for the grain storing facilities, i.e. the buildings, as

⁷²³ Bryan (2006), 77.

⁷²⁴ Cf. Papazian, (2013), 72.

⁷²⁵ For a discussion of the titles and areas of responsibilities in the Old Kingdom, see W. Helck (1954), *Untersuchungen zu den Beamtentiteln*, 58-67.

⁷²⁶ C. Meyer (1982), *Senenmut: eine prosopographische Untersuchung*, HÄS 2, 11.

⁷²⁷ Hayes (1942), 50 (LXVI, LXIX), pl. XXXI.

⁷²⁸ The argument could however, be made that the two titles are abbreviated forms of Chief Steward and Steward of the king described above.

⁷²⁹ See for example the translation of Hannig (2006), 52: "Ackervorsteher des Amun". For remarks on the title and further references, see for example Al-Ayedi (2006), 4 (12): "Overseer of the arable land (fields) of Amun".

⁷³⁰ Dziobek (1992), 131-134.

⁷³¹ See for example the translation of Hannig (2006), 72: "Scheunenvorsteher, Vorsteher der Scheunenverwaltung, Kornminister ("Vorsteher der Beiden Scheunen)". For further references on the title see Al-Ayedi (2006), 128 (423): "Overseer of the granaries of Amun".

well as the collection and eventual distribution of the grain and other crops.⁷³² This would have put him in an already advantageous position within the temple administration, but in addition, he was also Overseer of the Herds (of cattle) of Amun (*imy-r mnmnt n imn* (IV.1)), making him to a large degree responsible for the economic basis of the Karnak temple.

The above collection of titles and offices meant that Senenmut was well placed within the Egyptian administration and his ties and connections to both the palace and temple spheres basically provided the means, the motive, and the opportunity for him to construct a tomb as and where he wanted.

4.2.3 - Senneferi (TT 99)

As described above (4.2.1), Senneferi had his career described in an autobiography, which reveals three stages of progression.⁷³³ It starts in the area of Heliopolis where Senneferi was the ‘Mouth in charge of [that which is, and which is not]’ (*r hry m [ntt iwt n iwt]*) which is described as his first office (*i3wt(=i) tpt*). Senneferi was then promoted to Overseer of the Seal (*imy-r sd3wt* (II.3))⁷³⁴ as his second office and moved to Thebes, where he was also made Overseer of the Granary (*imy-r 3nwtj*), although not specified which granary is meant, palace or temple. In the third stage, Senneferi was Mayor (*h3ty-3*)⁷³⁵ and Overseer of the Priests of Sobek and of Anubis, possibly in Gebelein.⁷³⁶ He was also Overseer of the Priests of Min (in) Koptos (*imy-r hmw-n3rw n mnw gbtyw* (IV.1)),⁷³⁷ although it is uncertain at what stage in his career, as this is not specified within the stages of the biography. A fourth stage may have been outlined,⁷³⁸ but the biography in this place is damaged and the next line starts with “... Thebes as chief of the *h3ty-3* and Overseer of the Planted Fields of Amun” ([...] *w3st m hry-tp nw h3ty-3 m imy-r 3hwt nt imn*). The latter should probably not be confused with Overseer of the Fields of Amun (*imy-r 3hwt n imn* (IV.1)), which is also attested as a title for Senneferi.⁷³⁹ At some point in his career, he was also in charge of the administration of the estate of Amun as its Steward (*imy-r pr m pr imn* (IV.1)).⁷⁴⁰

In addition to the career and titles outlined above,⁷⁴¹ Senneferi also claimed the honorific titles of Hereditary Noble and Count (*iri-p3t h3ty-3* (I)), Sealbearer (of the King) of Lower Egypt (*sd3wtj-bity* (I)), and

⁷³² Bryan (2006), 81-85.

⁷³³ Strudwick (2016), 16-17.

⁷³⁴ A variation of the title ‘Overseer of the Seal of the King’ (*imy-r sd3wtj n nsu*) appears elsewhere in TT 99.

⁷³⁵ For the use of ‘Mayor’, see Strudwick (2016), 14.

⁷³⁶ This locality is suggested by H. Kees (1958), *Das Priestertum im ägyptischen Staat, vom Neuen Reich bis zur Spätzeit, Indices und Nachträge*. Probleme der Ägyptologie 1, 36.

⁷³⁷ The title occurs both in TT 99 and on Senneferi’s block statue in the British Museum, BM EA 48.

⁷³⁸ N. Strudwick (2000), “The Theban Tomb of Senneferi”, 243. Strudwick (2016), 16.

⁷³⁹ Ceiling of the corridor between the front room and the shrine (back room). Cf. Strudwick (2016), 158.

⁷⁴⁰ Title on a damaged double statue, Cairo CG 1013. Cf. Strudwick (2016), 25, fig. 10.

⁷⁴¹ For a more exhaustive list of the titles of Senneferi, see Strudwick (2016), 10-13.

Sole friend (of the king) (*smr wꜣty* (I)). A financial connection to the monarch is shown through the title of Steward of the King (*imy-r pr n nsw* (II.2)), and the more personal relationship is expressed through the titles of Great Chief in the Palace (*hry-tp ꜥ3 m pr-nsw* (II.1)), Envoy of the King (*wpwty nsw* (II.1)), and Herold of the King (*wḥm nsw* (II.1)). While not among the shared titles of the ‘super tomb’ owners, the last two designations would presumably involve some form of personal interaction with the king.

4.2.4 - User-Amun (TT 61 and TT 131)

The honorific titles of User-Amun⁷⁴² includes Hereditary Noble and Count (*iri-pꜣt ḥꜣty-ꜣ* (I)), Sealbearer (of the King) of Lower Egypt (*sdꜣwty-bity* (I)), and Sole friend (of the king) (*smr wꜣty* (I)). However, his most important and highest-ranking office was that of Vizier (*tꜣty* (II.3)), which means that he presumably had regular and personal contact with the king, as well as leading his own financial section of the royal administration, which included daily meetings with the Overseer of the Seal as seen above. Additionally and in connection with the palace sphere, User-Amun claims to have been both Master of Secrets of the Palace (*hry-sšꜣtꜣ n pr nsw* (II.1)) and Overseer of the Silver Houses (*imy-r pr.wy-ḥꜣ* (II.3)). As a possibly subordinate of the Overseer of the Seal, he presumably held the latter office before being made vizier.⁷⁴³ User-Amun is also attested as having held the title Overseer of the City (*imy-r niwt* (II.3)),⁷⁴⁴ a title that is often written prior to the title of vizier.⁷⁴⁵ The City undoubtedly refers to Thebes, but it is less certain whether the title was meant as an honorific or functional title. User-Amun’s ties to the temple sphere are first and foremost expressed through his office of Overseer of the Granary of Amun (*imy-r šnwt n imn* (IV.1)), but he also held titles connecting him to other deities and geographical locations; for example, as Follower of Min (*imy-ḥt mnw* (IV.2)) and as Guardian of Hierakonpolis (*iri-nḥn* (IV.2)).

4.2.5 - Amenemheb (TT 85)

Apart from the same honorific titles as User-Amun, Senneferi, and Senenmut, the only shared title of the top 13 tomb owners that Amenemheb claimed was that of Great (one) in the Palace (*ꜥ3 m pr nsw* (II.1)). The rest of his titles describe either a further personal relation or connection to the king (II.1) or are clearly related to the military (II.4). In the former grouping are the titles Child of the Kap (*hrd n kꜣp*),⁷⁴⁶ Mouth of the King (*rꜣ n nsw*), Ears of the Lower Egyptian King (*ꜥnhwy n bity*), Follower of his Lord (*šms nb=f*), and The

⁷⁴² For a comprehensive list of the titles of User-Amun, see E. Dziobek (1998), *Denkmäler des Vezirs User-Amun*, 157-164.

⁷⁴³ Bryan (2006), 77.

⁷⁴⁴ See for example the translation of Gardiner (1957), 572: “overseer of the (pyramid-) city, traditional title of the vizier”. Lesko (1984), 32: “mayor”. Hannig (2006), 62: “Stadtvorsteher”.

⁷⁴⁵ Cf. Dziobek, (1998), *op. cit.* ; Compare also Erman & Grapow (1971), II, 212.

⁷⁴⁶ For a discussion on the meaning of the title, see E. Feucht (1985), “The *hrdw n kꜣp* reconsidered”, 96-97.

Useful (one) of/for the King (*ṣḥ-ib n nsw*). These titles signify a close relationship between Amenemheb and the king, Thutmose III, whom he followed on military campaigns. In the latter group Amenemheb is attested with the titles of Commander of Troops (*ḥry pḏt*), Lieutenant of the Army (*idnw n mšꜥ*), and Soldier of (the barque) Amun-User-Hat (*wꜥw n imn-wsr-ḥꜣt*). Amenemheb describes both his military prowess and relationship to Thutmose III in his autobiography, where he claims to have been rewarded by the king with a “great reward” (*fkꜣ ṣꜥ*).⁷⁴⁷

4.2.6 - Kenamun (TT 93)

While having the same honorific titles as the four ‘super tomb’ owners described above, Kenamun⁷⁴⁸ was also Fan-bearer on the Right Side of the King (*tꜣy-ḥw ḥr wnmṯ n nsw (I)*).⁷⁴⁹ Davies describes the title as being ceremonial but at the same time implying a close relation to and corresponding influence with the king.⁷⁵⁰ This close relationship is exemplified by Kenamun claiming to be the ‘Foster-brother’ of the Lord of the Two Lands (*sn n mnꜥ n nb tꜣ.wy (II.1)*),⁷⁵¹ which most likely means that he grew up with the king. In addition to being Chief Steward of the King, Kenamun was also the Chief Steward of the King in Perunefer (*imy-r pr wr n nsw n prw-nfr (II.2)*),⁷⁵² as described above (4.2.1 n. 683), which gave him financial responsibilities within the royal household. In connection to the higher (or state) administration, Kenamun was Overseer of the Silver House (*imy-r pr ḥḏ (II.3)*), Overseer of all the Northern Foreign Lands (*imy-r ḥꜣswt nbt mḥtt (II.3)*), and Overseer of all Cattle/Bulls (*imy-r kꜣw.t nbt (II.3)*).

In relation to the temple sphere, Kenamun claimed the titles of Chief Steward of Amun (*imy-r pr wr n imn (IV.1)*) and Overseer of Cattle of Amun (*imy-r iḥw n imn (IV.1)*),⁷⁵³ the latter of which is one of the shared titles in table 5 above. Kenamun was also Overseer of the Magazine of Amun (*imy-r šnꜥ n imn (IV.1)*) and Inspector of the Granary of Amun (*rwḏ n tꜣ šnwt n imn (IV.1)*).

⁷⁴⁷ Urk. IV. 891, 14.

⁷⁴⁸ For a more exhaustive list of the titles of Kenamun, see Davies (1930), 10-16.

⁷⁴⁹ See for example the translations of Faulkner (1962), 186: “Fan-bearer”, Erman & Grapow (1971), V, 348: “Wedelträger”. Lesko (1989), 104: “fan bearer”. Hannig (2006), 1018: “Wedelträger zur Rechten des Königs (bedeutendes Ehrenamt)”. For further comments and references on the title, see Helck (1958), 281-284. Al-Ayedi (2006), 635-639 (2127): “Fan-bearer at the right of the king”.

⁷⁵⁰ Davies (1930), 13.

⁷⁵¹ Cf. Davies (1930), 15, n. 2.

⁷⁵² Cf. Davies (1930), 12.

⁷⁵³ See for example the translation of Hannig (2006), 53: “Rindervorsteher, Minister für Viehzucht (in der Zentralverwaltung)”. For further references see: Al-Ayedi (2006), 14-16 (47): “Overseer of the cattle of Amun”.

4.2.7 - Mery (TT 95)

Mery only claimed two of the shared honorific titles, that of Hereditary Noble and Count (*iri-p^ct ḥṣty-^c* (I)) and Sealbearer (of the King) of Lower Egypt (*sdṣwty-bity* (I)).⁷⁵⁴ Being the High priest of Amun (*ḥm ntr tpī n imn* (IV.1)), the other titles of Mery are almost exclusively connected to the temple of Amun. He thus carries many of the arguably highest administrative titles within that setting. This includes Overseer of the Priests of Upper and Lower Egypt (*imy-r ḥmw-ntr n šm^c mḥw* (IV.1)), Steward of Amun (*imy-r pr n imn* (IV.1)), (IV.1) Overseer of the Silver Houses of Amun (*imy-r pr.wy-ḥd n imn* (IV.1)), (IV.1) Overseer of the Gold Houses of Amun (*imy-r pr.wy-nbw n imn* (IV.1)), (IV.1) Overseer of the Granary of Amun (*imy-r šnwt n imn* (IV.1)), (IV.1) Overseer of the Fields of Amun (*imy-r ṣḥwt n imn* (IV.1)), (IV.1) Overseer of Cattle of Amun (*imy-r iḥw n imn* (IV.1)), and (IV.1) Overseer of all the Cattle/Bulls of Amun (*imy-r kṣw.t nbw.t n imn* (IV.1)).⁷⁵⁵ The title of Overseer of Upper Egypt (*imy-r šmṣ*) may have connection to the secular administration (II.3), but it could arguably also be an abbreviation for Overseer of the Priests of Upper and Lower Egypt. The same could be the case for the title of Chief (*ḥry-tp*).

4.2.8 - Sennefer (TT 96)

Of the honorific titles of table 5, Sennefer claimed three: *iri-p^ct ḥṣty-^c*, *sdṣwty-bity*, and *smr w^cty*. The most important of his titles was that of Mayor of the Southern City (*ḥṣty-^c n nīwt rsyf* (III)),⁷⁵⁶ as it is featured very prominently on the walls of his tomb. Sennefer's direct connection to the palace sphere is a tentative one, as he claimed the title of Steward of the Lord of the Two Lands Djeserkare (Amenhotep I) (*imy-r pr n nb tṣ.wy ḏsr-kṣ-r^c* (II.2)). As Amenhotep I would have been deceased for a relatively long time when Sennefer was in office, he clearly did not have a direct relationship or connection with that king, but he presumably oversaw an estate that was established by the king and still functioning in the time of Sennefer. Of the shared titles with a connection to the temple sphere in table 5, Sennefer claimed all four. In addition to these, he also carried the title Overseer of the Wood Magazine of Amun (*imy-r ṣt nt ḥt nt imn* (IV.1)). These five titles would in effect have made Sennefer a subordinate of the High priest of Amun, Mery, who was a contemporary and whose tomb is situated immediately next to TT 96 (see image 18 below). Being the Mayor of Thebes and bearing titles relating to the temple of Amun as well as the placement of his tomb indicate that Sennefer would have had some form of regular interaction with Mery.

⁷⁵⁴ Cf. Urk. IV, 1414-1415.

⁷⁵⁵ For the occurrence of this title see Polz, Daniel (1991), "Jamunedjeh, Meri und Userhat", 284 n. 24. In *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo, band 47. Festschrift für Werner Kaiser* (Mainz: Philipp von Zabern), 281-291.

⁷⁵⁶ R. Gundlach et al. (1988), *Sennefer. Die Grabkammer des Bürgermeisters von Theben*, 32.

4.2.9 - Userhat (TT 47)

Theban Tomb 47 has unfortunately been inaccessible since the early 20th century and knowledge of Userhat's titles, let alone his career, is therefore very limited. Howard Carter visited the tomb and reported only two titles for its owner: Hereditary Noble and Count (*iri-p^ct ḥzty-^c* (I)) and Overseer of the Royal Quarters (*imy-r ipt nsw* (II.2)).⁷⁵⁷

4.2.10 - Amenemhet (TT 48)

Like Kenamun before him, Amenemhet claimed all four of the shared honorific titles in table 5. His personal connection to the king is demonstrated by the shared title Great Chief in the Palace (*ḥry-tp ^c3 m pr-nsw* (II.1)) and further illustrated by the two designations of Companion of the Lord of the Two Lands (*iri-rdwi n nb-t3.wy* (II.1)) and The Useful (one) of/for the King (*3ḥ-ib n nsw* (II.1)). Amenemhet's financial ties to the palace are revealed through his claim of the two shared titles of Chief Steward of the King (*imy-r pr wr n nsw* (II.2)) and Steward of the King (*imy-r pr n nsw* (II.2)). In this connection, the title of Overseer of Every Craft of the King (*imy-r ḥmwt nbt nt nsw* (II.2)) is also interesting, as it presumably entailed administration of many craftsmen and materials.

The following four titles may reveal Amenemhet's connection to the local administration (III) in one or several locations: He claimed to be Overseer of Horned Cattle (*imy-r ^cb*), Overseer of Hoofed Animals (*imy-r whmt*), Overseer of Fowl (*imy-r šwt*), and Overseer of Fowl and Fish (*imy-r šwt nšmwt*). As all four titles are unspecified in terms of geographical or institutional affiliation, I choose to see them as belonging to the sphere of regional administration. Amenemhet's connection to the financial side of the temple administration (IV.1) is shown with the titles of Divine Treasurer of Amun (*sd3wty-ntr n imn*), Overseer of Fields of Amun (*imy-r 3hwt n imn*), Overseer of Cattle of Amun (*imy-r iḥw n imn*), and Overseer of the Teachers of Amun (*imy-r sb3w n imn*).⁷⁵⁸ As Divine Treasurer, he would arguably have been in charge of the overall administration of the Amun temple and he would have seen to the upkeep of its resources as Overseer of Fields and Cattle, as well as managed part of the temple personnel as Overseer of the Teachers.

4.2.11 - Ramose (TT 55)

Apart from claiming the three honorific titles (I) of Hereditary Noble and Count (*iri-p^ct ḥzty-^c*), Sealbearer (of the King) of Lower Egypt (*sd3wty-bity*), and Sole friend (of the king) (*smr w^cty*), Ramose was also the

⁷⁵⁷ Ch. Kampp (1996), 246-247.

⁷⁵⁸ Säve-Söderbergh (1957), 36.

Vizier (*t3ty* (II.3)) during the reign of Amenhotep III.⁷⁵⁹ In this capacity, he also claimed the title of Administrator or Director of Upper and Lower Egypt (*hrp šmꜥ mhꜥw* (II.3)) as well as being Overseer of Works on the Great Monuments (*imy-r k3wt m mnw wrw* (II.3)). Ramose further claimed the title of Overseer of the City (*imy-r nꜥwt* (II.3)) which, as seen in the case of User-Amun, is often written before the title of vizier and as such could be an honorific designation. A similar argument can be made for Ramose's titles that connect him to the temple sphere, i.e., titles he could claim because he was the vizier. These titles are Overseer of the Priests of Upper and Lower Egypt (*imy-r ḥmw-nꜥr n šmꜥ mhꜥw* (IV.1)), Overseer of the Temples of all the Gods (*imy-r ḥwtw nꜥrw nbw*), and Guardian of Hierakonpolis (*iri-nḥn* (IV.2)), the latter of which is also claimed by the vizier User-Amun.

4.2.12 - Nefersekheru (TT 107)⁷⁶⁰

In his tomb, Nefersekheru claims the same shared honorific titles as Ramose above and, in addition, the title of Steward of the Estate of Nebmaatre (Amenhotep III) (*imy-r pr n pr nb-m3ꜥt-rꜥ* (II.2)), which is the name for the palace of the same king in modern day Malkata. As one of the most prolific builders of ancient Egypt, Amenhotep III would have had a great number of workmen in the Theban area, working on both the Malkata palace, his mortuary temple with its large statues, and the great artificial lake of Birket Habu, excavated in front of the palace area. As Steward, Nefersekheru would presumably oversee hundreds if not thousands of people, giving him at the very least an opportunity for diverting some of these human resources. He is further attested with the unspecified title of Steward (*imy-r pr*) which could be an abbreviation of the former designation or it could belong to the regional administration as seen with Amenemhet above. Nefersekheru's affiliation with the temple sphere is expressed through the two titles Overseer of the Granary of Amun (*imy-r šnwt n imn* (IV.1)), and Overseer of Cattle of Amun (*imy-r iḥw n imn* (IV.1)).

4.2.13 - Kheruef (TT 192)

The honorific titles of the owner of the largest private Theban tomb of the 18th Dynasty, Kheruef, are the same as his contemporaries Ramose and Nefersekheru. Kheruef's personal relation to the king is illustrated by the two titles First Herold of the King (*wḥm nsw tpy* (II.1)) and Master of Secrets of the Palace (*hry-sšt3 n pr nsw* (II.1)), both of which would presumably put him into regular contact with the ruler. His financial connection to the king is attested in indirect form in the two titles Steward of the Great Royal Wife Tiye (*imy-r pr ḥmt nswt wrt tīy* (II.2)) and Steward of the Great Royal Wife in the Temple of Amun (*imy-r pr ḥmt*

⁷⁵⁹ For a more exhaustive list of the titles of Ramose, see Davies (1941), *The tomb of the vizier Ramose*, 42-43.

⁷⁶⁰ All titles are listed in Urk. IV, 1881-1883.

nswt wrt m pr imn (II.2)), the latter of which also infringes on the temple sphere. Kheruef was also probably in daily contact with the vizier, very likely the abovementioned Ramose, as the Overseer of the Seal (*imy-r sd3wt* (II.3)) exchanging reports and information about the wellbeing of the royal household. Kheruef is also attested with the title of Steward (*imy-r pr*) and just as Nefersekheru above this may or may not be an abbreviation or relate to regional administration. A more precise variation of the title, namely Steward of (the House of) Amun (*imy-r pr n (pr) imn* (IV.1)), demonstrates Kheruef's affiliation with the Karnak temple.⁷⁶¹

4.2.14 - Nay (TT 271)

The honorific titles of Nay only include the titles Hereditary Noble and Count (*iri-p^ct h3ty-^c*) and Fan-bearer on the Right Side of the King (*t3y-hw hr wnmt n nsw*). His connection to the king is expressed through the title of Overseer of the Royal Quarters (*imy-r ipt nsw* (II.2)) and his relationship with the army through the title Scribe of Recruits (*sh3w nfrw* (II.4)).⁷⁶² Nay's affiliation with the regional administration comes from his title as Overseer of Works (*imy-r k3t* (III)).

4.3 - The 'mini tombs' and their owners

To determine whether the shared titles, and the spheres to which they belong, had any economic significance for the owners of the 'super tombs', a comparative discussion is necessary. At the other end of the spectre in terms of volumetric size are the smallest tombs of the 18th Dynasty which are between 0 and 50 m³ in size, an artificially determined interval which singles out 15 tombs for further investigation. These are presented in figure 30.

⁷⁶¹ For a more comprehensive list of the titles of Kheruef see D. B. Larkin (1980), "Titles and Epithets of Kheruef". In *The Tomb of Kheruef. Theban Tomb 192*, The Epigraphic Survey (Oriental Institute Publications Volume 102), 78-80.

⁷⁶² See for example L. Habachi & P. Anus (1977), *Le tombeau de Naï à Gournet Mar-ei*, (no. 271), fig. 7.

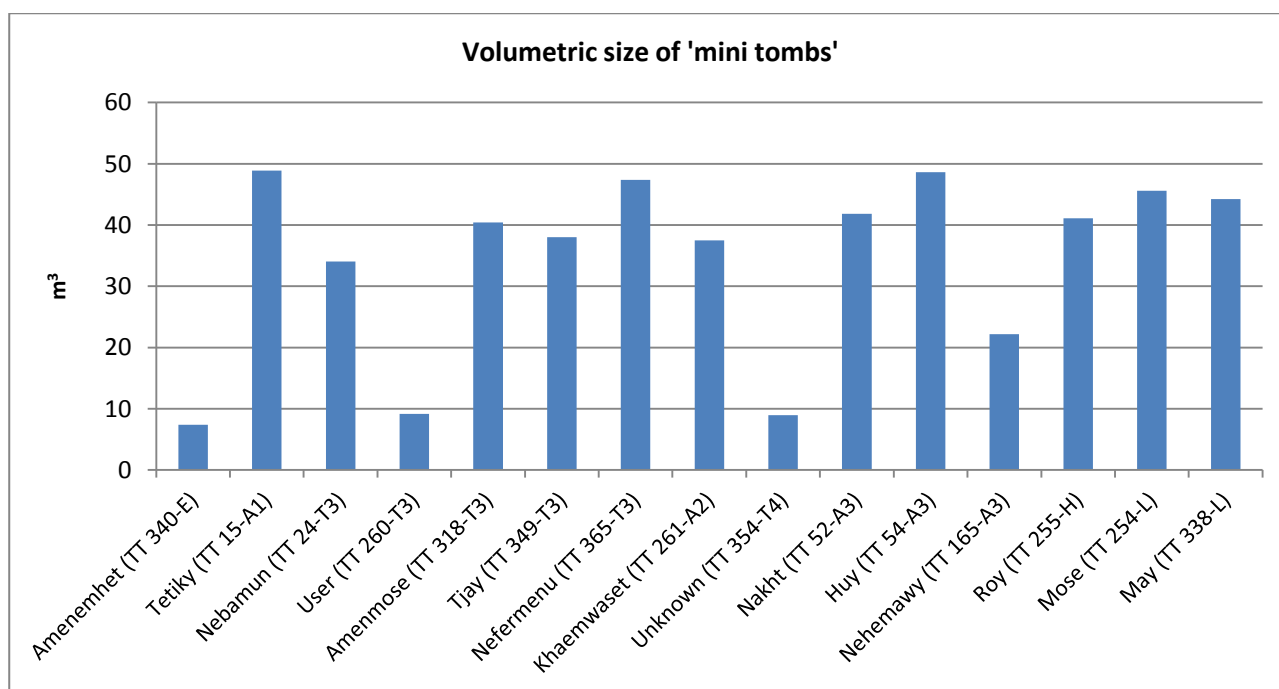


Figure 30 - The smallest Theban private tombs in chronological order; E=Early 18th Dynasty, A=Amenhotep, T=Thutmose, H=Horemheb, and L=Late 18th Dynasty.

The number of titles among the bottom 15 tomb owners is considerably smaller compared to the top 13, and the overall impression is that they represent a lower level in status and rank. Some of the officials do have similar titles as the 'super tomb' owners but only very few. In the following, each of the 'mini tomb' owners' titles is briefly discussed in the same sequence as in figure 30.

The owner of the smallest of the Theban tombs (TT 340) is Amenemhet, whose title is the simple Servant (*šdm-ꜥš*).⁷⁶³ Amenemhet lived in the beginning of the 18th Dynasty and the tomb is one of the first in the area of Deir el-Medina.

Tetiky, the owner of TT 15 in Dra' Abu el-Naga is labelled as King's Son (*šꜣ nsw*)⁷⁶⁴ and Mayor of the Southern City (*ḥꜣty-ꜥ n nīwt rsyt*),⁷⁶⁵ the latter being the same title Sennefer (TT 96) carried and part of the regional administration (group III). As the tomb of Tetiky is dated to reign of Amenhotep I at the latest,⁷⁶⁶ the relatively important title of mayor was possibly what allowed him to build his tomb near the old 17th Dynasty royal tombs.

⁷⁶³ B. Bruyère (1926), *Rapport sur les fouilles de Deir el Médineh (1924-1925)*, 73 ; A. Fakhry (1947), "A Report on the Inspectorate of Upper Egypt", 38 ; N. Cherpion (1999), *Deux tombes de la XVIIIe dynastie à Deir el-Medina, Nos 340 (Amenemhat) et 345 (anonyme)*, 41-47.

⁷⁶⁴ N. de G. Davies (1925), "The Tomb of Tetaky at Thebes (No. 15)", pl. III. In *JEA* 11, 10-18 (for the use of the title see especially page 18).

⁷⁶⁵ Carnarvon, Earl of & H. Carter. (1912), *Five Years' Explorations at Thebes*, 21.

⁷⁶⁶ Davies (1925), 18.

TT 24 in Dra' Abu el-Naga was owned by Nebamun who claims the title of Hereditary Noble and Count (*iri-pꜣt ḥꜣty-ꜣ (I)*).⁷⁶⁷ The relatively small size of TT 24 demonstrates that the title was honorific in nature and found with tomb owners at both ends of the volumetric spectrum. On a stela in the tomb, Nebamun had his career described:⁷⁶⁸ First he was appointed Overseer of the Office (building) of the King (*imy-r ḥꜣ n nsw*)⁷⁶⁹ by Thutmose II. He was then appointed Steward of the Royal Wife Nebtu (*imy-r pr ḥmt nsw nbtw*)⁷⁷⁰ by Thutmose III, who also, presumably at a later stage, made Nebamun Overseer of all Ships of the King (Admiral) (*imy-r ḥꜣw nb n nsw*).⁷⁷¹ While Nebamun claimed the title of Steward, as many of the 'super tomb' owners did, the impression here is that of an office of lesser status. Especially when factoring in his other title of *imy-r ḥꜣ*,⁷⁷² which compared to that of a Steward or Admiral, must have had a much more limited area of responsibility both in terms of physical space as in the control of and access to resources.

The titles of User, the owner of TT 260 in Dra' Abu el-Naga, leave the same impression of dealing with a lower level as seen in the case of Nebamun. User was the Measurer (of grain) of Amun (*ḥꜣw n imn*) and Overseer of the Plough-lands of Amun (*imy-r ḥbsw n imn*),⁷⁷³ thus very likely a subordinate of the Overseer of the Granary of Amun such as the 'super tomb' owners Senenmut or User-Amun. In either case, User was employed within the temple sphere, as was the owner of TT 318 in Sheikh Abd el-Qurna, Amenmose, whose only title was Stonemason of Amun (*ḥrtyw-nꜥr n imn*).⁷⁷⁴ The level on which the latter title is to be considered is possibly mirrored by the title Overseer of Fowl-houses of the Steward of Amun (*imy-r ḥꜣrmw n imy-r pr n imn*) which Tjay, the owner of TT 349 in Sheikh Abd el-Qurna, holds.⁷⁷⁵ As Overseer of the Fowl-houses, Tjay was relatively important, but the title was clearly not on the same level as that of the Steward for whom he worked. Tjay is also attested with the similar title of Overseer of Fowl-houses (*imy-r ḥꜣr(mw)*), but this may be an abbreviation of the former. The title Chief Steward (*imy-r pr wr*) occurs in TT 349 but whether it refers to Tjay is not certain, as the left wall of the passage of the tomb on which the title is found is damaged and the context is unclear.⁷⁷⁶

The last of the officials from the reign of Thutmose III, and still within the temple sphere, is Nefermenu, the owner of TT 365 in El-Khokha, who was both Supervisor of the Wig-makers of Amun (*ḥry nbdw n imn*) and

⁷⁶⁷ Urk. IV, 147; 152.

⁷⁶⁸ Urk. IV, 150.

⁷⁶⁹ G. Daressy (1893), *Recueil de cônes de funéraires*, 279.83.

⁷⁷⁰ Urk. IV, 147; 150 ; 152.

⁷⁷¹ Urk. IV, 151; 153 (here as *ḥry / imy-r ḥꜣw n nsw*).

⁷⁷² I make the assumption that *ḥꜣ* here refers to a physical office or building rather than the bureau or agency of the king. Cf. K. Sethe (1914), *Urkunden der 18. Dynastie I. Bearbeitet und Übersetzt*, 73 n. 3. See also A. M. Gnirs (2013), "Coping with the Army: The Military and the State in the New Kingdom", 652.

⁷⁷³ M. Nasr (1993), "The Theban Tomb 260 of User", 177. In *Studien zur Altägyptischen Kultur* 20, 173-202.

⁷⁷⁴ Cf. Porter-Moss, 391.

⁷⁷⁵ M. Nasr (1985), "The Tomb of Tay (Theban No. 349)", 78. In *Studien zur Altägyptischen Kultur* 12, 75-100.

⁷⁷⁶ Nasr (1985), Tafel 7.

Scribe of the Treasury of Amun (*sš pr-ḥd n imn*).⁷⁷⁷ The first office seems to have been an administrative role for a specialised craft, the employees of which could have had their workshops located within or otherwise related to the temple of Karnak. As such, they and their superior Nefermenu were possibly under the authority of the Overseer of Every Craft of Amun (*imy-r ḥmwt nbt nt imn*),⁷⁷⁸ who presumably administered the materials and people within the temple. The second title of Nefermenu also refers to a supporting office, in this case related to the Divine Treasurer of Amun (*sdzwtj-ntr n imn*). Both titles are then on a lower level than those often claimed by the top 13 tomb owners.

The trend of lower status titles continues with the next four ‘mini tomb’ owners.⁷⁷⁹ In the reign of Amenhotep II, Khaemwaset, the presumed owner of the unfinished tomb TT 261 in Dra’ Abu el-Naga only claimed the title of Wab-priest of Amenhotep I (*wꜥb n dsr-kꜣ-rꜥ*) on his funerary cones.⁷⁸⁰ Nakht, the owner of TT 52 in Sheikh Abd el-Qurna, from the reign of Amenhotep III, has only the titles of Scribe (*sš*) and Hour-priest (of Amun) (*wnwt (n imn)*) attested for him.⁷⁸¹ Similarly, the owner of TT 54 in Sheikh Abd el-Qurna, Huy, claimed only a modest title, namely that of Sculptor of Amun (*tꜣy mꜥꜣt n imn*),⁷⁸² and the owner of TT 165 in Dra’ Abu el-Naga, Nehemawy, claimed to be Goldsmith (*nby*) and Sculptor (*sꜥnh*).⁷⁸³

Roy, the owner of TT 255 in Dra’ Abu el-Naga, claimed two titles, the first of which is so common as to have been left out in the description of the ‘super tomb’ owners. While arguably not an honorific title, the designation of Royal Scribe (*sš nsw*) seems to have been used along the lines when looking at the owners of Theban private tombs. The second of Roy’s titles is Steward in the Estate of Horemheb (and) in the Estate of Amun (*imy-r pr m pr ḥr-m-ḥb m pr imn*).⁷⁸⁴ As indicated, this can be read two ways; either as Steward for both Horemheb and Amun, or as Steward for the specific estate of Horemheb within the estate of Amun. As other Stewards of estates of kings, e.g. Nefersekheru, or queens, e.g. Kheruef, tend to have a larger number of titles than Roy, the latter interpretation seems more reasonable.

The last two ‘mini tombs’ date to the Late 18th Dynasty and both owners are credited with titles at the same level(s) as the other officials discussed in this section. The first is Mose, owner of TT 254 in El-Khokha, who is attested with the following four designations: Scribe of the Treasury (of) Amun (*sš pr-ḥd imn*);

⁷⁷⁷ B. Engelmann-von Carnap (2003), “Zwei Gräberensembles in Khokha-Sud: Zur Konzeption der Bilder in Seitenanlagen am Grabhof der 18. Dynastie”, 21-22.

⁷⁷⁸ Rekhmire (TT 100) held this title in addition to being the vizier. See Davies (1943), pl. 100.

⁷⁷⁹ This includes TT 354 in Deir el-Medina from the reign of Thutmose IV which is not inscribed with any name or titles, but from the very small size and the location, it belonged to an official with similar designation(s) as Amenemhet (TT 340). Cf. N. Cherpion (1999), *Deux tombes de la XVIIIe dynastie à Deir el-Medina, Nos 340 (Amenemhat) et 345 (anonyme)*.

⁷⁸⁰ M. Nasr (1988), “The Theban Tomb 261 of Kha’emwese in Dra’ Abu el-Naga”, 233.

⁷⁸¹ N. de G. Davies (1917), *The tomb of Nakht at Thebes*, 49.

⁷⁸² D. Polz (1997), *Das Grab des Hui und des Kel, Theben Nr. 54*, 133-134.

⁷⁸³ N. de G. Davies (1913), *Five Theban tombs*, 41.

⁷⁸⁴ G. Foucart (1928), *Le tombeau de Roÿ*, 29, fig. 7.

Guardian of the Treasury (of Amun) (*iry pr-ḥd (n imn)*); Guardian of the Treasury of the Estate of Amun-Re (*iry pr-ḥd n pr imn-rꜥ*); and Guardian of the Estate of Teye in the Estate of Amun (*iry (n) pr tīy m pr imn*).⁷⁸⁵ The first three titles indicate that Mose was a subordinate of the Divine Treasurer of Amun, similar to Nefermenu. The last title of Mose is similar to the second title of Roy and possibly demonstrates a specialised endowment established by the former queen within the estate or household of Amun for which Mose was responsible. The owner of TT 338 in Deir el-Medina, May, only claimed the title of Draughtsman of Amun in the Place of Truth (*sš-ḳd n imn m st-mꜣt*).⁷⁸⁶

The analysis above demonstrates that while these men were able to build tombs in the Theban necropolis, they did so from a lower economical basis than the top 13 tomb owners and this is reflected in the relative size of their tombs. The same tendency should also be detectable for the titles of the owners of tombs that fall just outside the ‘mini tomb’ and ‘super tomb’ category, i.e., tombs that are slightly larger than the 50 m³ limit of the former group and slightly smaller than the 500 m³ mark of the latter group. The assumption is, however, complicated by the occurrence of titles of presumed lesser status within the group with larger tombs and higher status titles within the group with the smaller tombs. For example, the owner of TT 121, which volumetrically is the 20th largest tomb (369.7 m³), Ahmose, is attested to have been the First (or Second) Lector-priest of Amun (*hry-ḥbt tpī (snnw) n imn*).⁷⁸⁷ At the same time, the owner of the relatively small TT 69 (68.6 m³) is attested with the title Overseer of the Fields of Amun (*imy-r ḥwt n imn*) as well as Overseer of the Fields of the Lord of the Two Lands (*imy-r ḥwt n nb tꜣ.wy*).⁷⁸⁸ It is therefore difficult to determine a single ‘shared title’ among the 18th Dynasty Theban private tomb owners.

4.4 - Tombs and titles

While no single title can be determined as being universally used among the tomb owners, an overall grouping is possible. However, before attempting to do so, more tombs and tomb owners need to be introduced. Focusing again on the upper end of the volumetric scale, the top 25 tomb owners in terms of volumetric size, apart from the ‘super tomb’ owners described above, are as follows (figure 31):

⁷⁸⁵ N. Strudwick & H. M. Strudwick (1996), *The tombs of Amenhotep, Khnummose, and Amenmose at Thebes, (nos. 294, 253, and 254)*, 56-57.

⁷⁸⁶ Bruyère (1926), 192-193. On a stela that probably was set in the small brick pyramid above TT 338, May is only referred to as *sš-ḳd*. Cf. J. Černý (1958), *Egyptian stelae in the Bankes Collection*, No. 1; Porter-Moss, 406.

⁷⁸⁷ For First Lector see Porter-Moss, 235. For Second Lector see P. A. Piccione (2005), “Theban Tombs Publication Project: Theban Tombs No., 72 (Ray) and 121 (Ahmose): Report on the 2001 Field Season”, 127. Also confer M. Wasmuth (2003), 114: “Titel und Epitheta: nicht bekannt”.

⁷⁸⁸ M. Hartwig (2013), *The Tomb Chapel of Menna (TT 69)*, 16; Wasmuth (2003), 96.

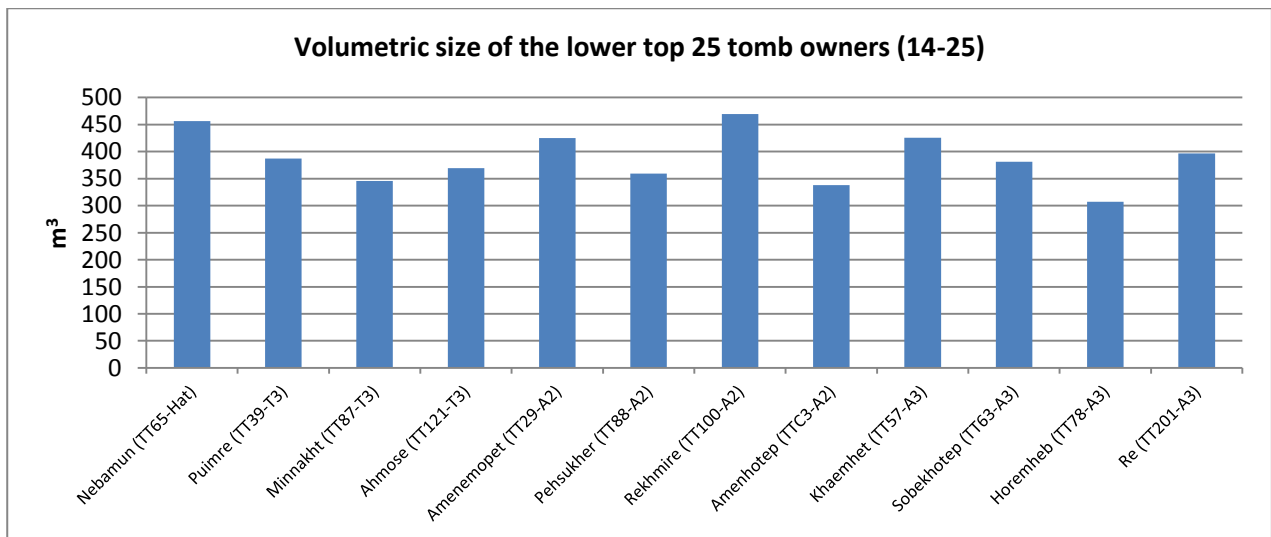


Figure 31 – The top 14 to 25 Theban private tombs in chronological order; Hat=Hatshepsut, T=Thutmose, and A=Amenhotep.

These 12 tombs, the lower end of the top 25 tombs, are thus found within the volumetric range between 300 m³ and 500 m³ and primarily date to the high-output period of the Middle 18th Dynasty (see figures 13 to 18 above). As mentioned, determining a shared group of titles is difficult. Including more tomb owners also increases the group of titles that they share. Adding the titles of the 12 tomb owners of figure 31 to the titles of the ‘super tomb’ owners reveals two new shared titles that occur three times or more. These are those of Vizier and Overseer of the City. At the same time, the distribution of the titles in table 5 is altered in terms of number of occurrences. This is shown in table 6 below.

Quantity	Title	Translation	Category
18	<i>iri-p^ct ḥzty-^c</i>	Hereditary Noble and Count ⁷⁸⁹	(I)
14	<i>sdzwtj-bity</i>	Sealbearer (of the King) (of Lower Egypt) ⁷⁹⁰	(I)
12	<i>smr w^cty</i>	Sole friend (of the king) ⁷⁹¹	(I)
6	<i>ḥry-tp ʿz m pr-nsw</i>	Great Chief in the Palace ⁷⁹²	(II)
6	<i>imy-r zḥwt n imn</i>	Overseer of the Fields of Amun ⁷⁹³	(IV)
5	<i>imy-r pr n nsw</i>	Steward of the king	(II)
5	<i>imy-r iḥw n imn</i>	Overseer of Cattle of Amun ⁷⁹⁴	(IV)
5	<i>imy-r šnwty n imn</i>	Overseer of the Granary of Amun	(IV)
4	<i>tzy-ḥw ḥr wnmt n nsw</i>	Fan-bearer on the Right Side of the King ⁷⁹⁵	(I)
4	<i>tzy</i>	Vizier ⁷⁹⁶	(II)
4	<i>imy-r niwt</i>	Overseer of the City ⁷⁹⁷	(II.3)
4	<i>imy-r sdzwt</i>	Overseer of the Seal ⁷⁹⁸	(II)
3	<i>imy-r pr wr n nsw</i>	Chief Steward of the king	(II)
3	<i>imy-r pr</i>	Steward	(III)
3	<i>imy-r pr n imn</i>	Steward of Amun	(IV)

Table 6 - The shared titles of the top 25 tomb owners. Quantity refers to the number of men with the title attested. Category refers to the honorific or economic categories.

Some observations should be further elaborated on when comparing table 6 to table 5. First, while having nearly doubled the number of tomb owners, the overall increase for the occurrences of the individual title is only 50% for the title with the highest increase (from four to six occurrences of the title *tzy-ḥw ḥr wnmt n nsw*). Second, the titles Steward of the King and Chief Steward of the King do not occur again when including the next 12 largest tombs. Finally, attention should be brought to the fact that while two of the ‘super tomb’ owners are labelled as viziers, only two titleholders are further added when including the tombs of within the 300-500 m³ range. However, there are six viziers attested within the 18th Dynasty Theban necropolis: The two remaining titleholders are Amethu, the owner of TT 83 (238 m³) from the reign of Thutmose III, and Hepu, the owner of TT 66 (257 m³) from the reign of Thutmose IV. As the viziers in general are considered the most influential officials below the king, both politically and economically, it is

⁷⁸⁹ This title is attested for another five officials: Rekhmire (TT 100), Nebamun (TT 65), Khaemhet (TT 57), Puimre (TT 39), and Sobekhotep (TT 63).

⁷⁹⁰ This title is further attested for: Nebamun (TT 65), Puimre (TT 39), and Sobekhotep (TT 63).

⁷⁹¹ Further attested for: Puimre (TT 39) and Sobekhotep (TT 63).

⁷⁹² Nebamun (TT 65), and Sobekhotep (TT 63).

⁷⁹³ This title is attested for one other official: Puimre (TT 39).

⁷⁹⁴ Puimre (TT 39).

⁷⁹⁵ Sobekhotep (TT 63).

⁷⁹⁶ Attested for: Ramose (TT 55), User-Amun (TT 61 and TT 131), Rekhmire (TT 100), and Amenemopet (TT 29).

⁷⁹⁷ Attested for: Ramose (TT 55), User-Amun (TT 61 and TT 131), Rekhmire (TT 100), and Amenemopet (TT 29). All four were viziers which mean that this title was more of an honorific or came with the office of vizier (of the South). See 4.2.1 above.

⁷⁹⁸ Also attested for Sobekhotep (TT 63).

not surprising to find two thirds of the titleholders of the dynasty with attested tombs to be among the owners of the very largest funerary monuments. The two vizier tombs not included in the top 25 suggests that there presumably were other aspects to be considered when building a tomb other than its size and decoration. One of these is the location within the necropolis.

4.5 - Locations

The location of the tombs of the top 13 officials in particular is worth considering, as the geographical distribution could indicate a wish on the part of the tomb owner to build in a specific place. It could also indicate that available space in other locations was limited or that a proximity to the monuments of the ruler or other significant sites was important. It has previously been argued that the general development of the Theban necropolis was from the northern end (el-Tarif and Dra Abu el-Naga) towards the southern end (Qurnet Murai), following the construction of the royal mortuary temples in the area.⁷⁹⁹ In the early part of the 18th Dynasty, the 'super tombs' broadly follow this picture, but in the reign of Amenhotep III, the pattern is disrupted (see image 18).

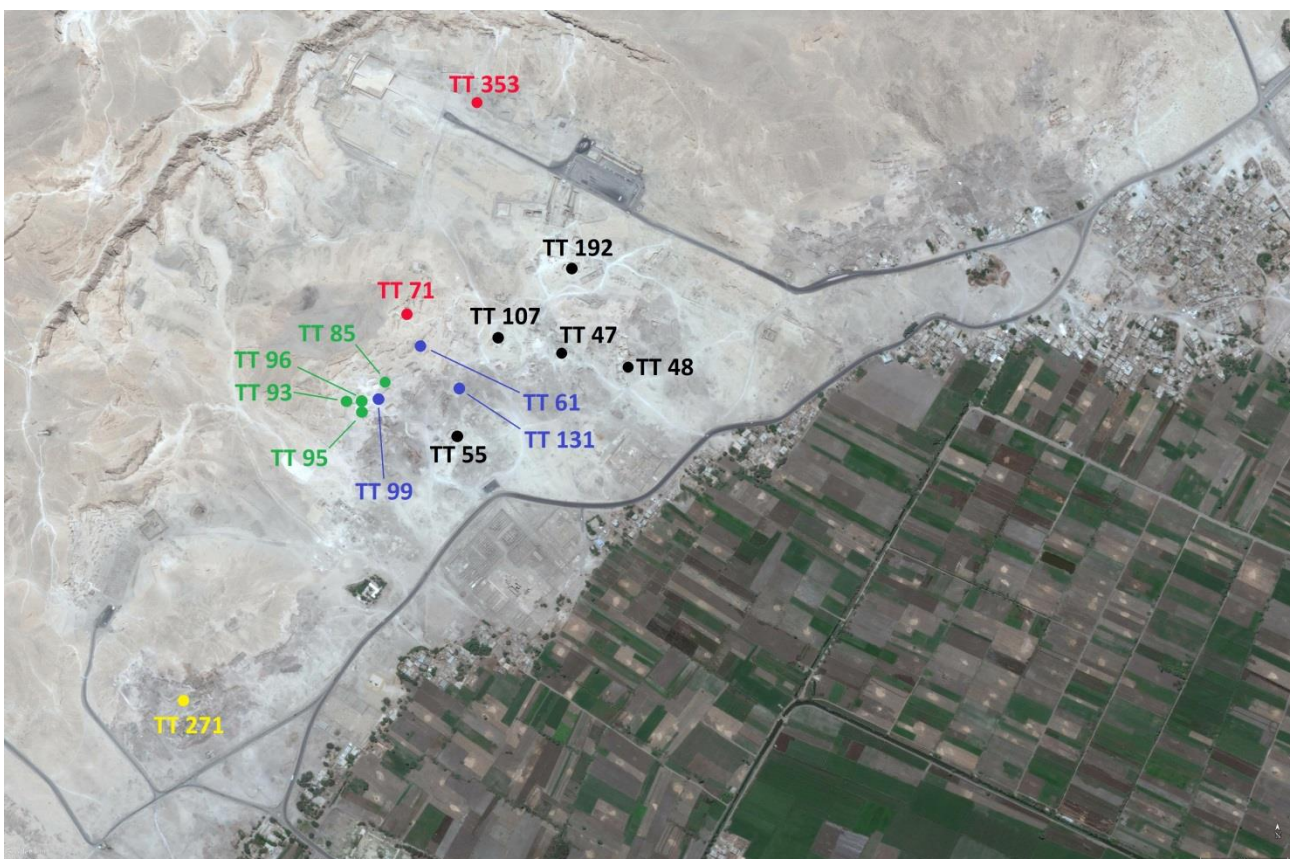


Image 18 – Geographical distribution of the 'super tombs'. Red colour indicates tombs from the reign of Hatshepsut, blue Thutmose III, green Amenhotep II, black Amenhotep III, and yellow the reign of Ay. Image from Google Earth.

⁷⁹⁹ Cf. Helck (1962), "Soziale Stellung und Grablage". In JESHO 5, 225-243; Kampp-Seyfried (2003), 2.

The geographical locations of the 15 tombs belonging to the top 13 tomb owners are distributed over the following locations: Qurnet Murai: 1 tomb (TT 271). Sheikh Abd el-Qurna: 9 tombs (TT 55, TT 61, TT 71, TT 85, TT 93, TT 95, TT 96, TT 99, TT 131). El-Assasif: 1 tomb (TT 192). Deir el Bahri: 1 tomb (TT 353). El-Khokha: 3 tombs (TT 47, TT 48, TT 107). The names of the areas are modern labels and there is nothing to indicate that the ancient Egyptians saw more than one single necropolis in western Thebes. Within this area, there are certain parts which were more popular than others,⁸⁰⁰ but as more and more tombs were built, the more pressing the issue of weighing the wanted tomb size against the desired locality must have become. Image 18 shows the various locations of the 'super tombs' and indicates the diachronic placement by using different colours. As described in chapter 3.1.1, the earlier tomb owners, such as Senenmut during the reign of Hatshepsut, could choose whichever location they found best suited for their monument(s). This was probably still the case when Thutmose III became sole ruler, but less so by the time of Amenhotep II. During the reigns of those two kings, the southern end of the Sheikh Abd el-Qurna hill seems to have been the location of choice for large tombs,⁸⁰¹ except for User-Amun who evidently had other considerations for the placement of his two tombs in mind. One such consideration could be the proximity to the mortuary temple of Thutmose III, of which User-Amun would have had an excellent view from both tombs.⁸⁰² Similarly, the placement and construction of tombs during the reign of Amenhotep II very likely had related to the location of the mortuary temple immediately to the north of the Ramesseum.

The proximity to the royal mortuary temple would on a practical level mean a closer proximity to the gangs of workmen employed here, i.e. easier logistical access to a pre-existing workforce, if such considerations were important. To this, one should add the religious aspect that the underworld was seen as a mirror of reality, so if the tomb owner was close to the king in life, either by architecture or by titles or personal relationship, this would continue in the afterlife.⁸⁰³ A good example of choosing location over size comes from the 6th Dynasty tomb of the vizier Hesi at Saqqara.⁸⁰⁴ The tomb, consisting of just one room, is very small compared to the tombs of the viziers Mereruka and Kagemni who preceded Hesi in office during the reign of Teti. In his biographical text on the doorframe of the tomb he explains that he actively chose to build a single roomed tomb despite being in a position to build a much larger structure.⁸⁰⁵ The implication is that there seems to have been different sectors of the necropolis, at least in 6th Dynasty Saqqara, which were coveted and desirable than others.

⁸⁰⁰ Kampp-Seyfried, (2003), 2.

⁸⁰¹ See for example Strudwick (2016), 37-44.

⁸⁰² The horizontal distance between the entrance of TT 131 and the south-western corner of the mortuary temple is approximately 375 meters. From TT 61, the distance to the temple is approximately 500 meters. See image 20 below.

⁸⁰³ See for example Wasmuth (2003), 49.

⁸⁰⁴ Chauvet (2007), 317-321.

⁸⁰⁵ Chauvet (2007), 317. See also the translation of J. Baines (2015), "On the Old Kingdom Inscriptions of Hezy", 522.

By the reign of Amenhotep III, space for large tombs seems to have been unavailable on the upper parts of the Qurna hill, as all five 'super tombs' of that reign are placed either on the lowest level of the hill or on the desert floor in the areas of el-Khokha or el-Assasif. This is the disruption to the pattern outlined above that tombs tend to follow the location of the mortuary temple of the current king.⁸⁰⁶ The temple of Amenhotep III is located south of the later Ramesseum, about two thirds of the way to Medinet Habu. The obvious location for private tombs to be built in relatively proximity to the temple is the hill of Qurnet Murai, where the tomb of Nay from the reign of Ay is located.⁸⁰⁷

It is not entirely clear why these five 'super tomb' owners chose to build their tombs relatively far from the mortuary temple of their contemporary ruler, assuming, of course, that the location of the temple was known before construction of the tombs began. There is arguably plenty of space on the desert floor between the Qurnet Murai hill and the mortuary temple that would accommodate the large tombs, but the rock found there may be of the friable quality that the Esna Shale Formation displays elsewhere.⁸⁰⁸ I would argue that the location of the five 'super tombs' in the reign of Amenhotep III has to do with the geological layers found in their individual positioning. TT 55, TT 107, TT 47, and TT 48 all lie close to the borderline between the chalky limestone of the Tarawan Chalk Formation (see 3.1.3 above) and unit 1 of the Thebes Limestone Formation, avoiding the comparably poor quality of the Esna Shale. TT 192 lies within the Tarawan Chalk Formation which is here exposed in a bulge towards Deir el-Bahri, below the level of the Esna Shale of this area.⁸⁰⁹ The approximate depth of the latter rock type was already delved and tested in Deir el-Bahri when workers excavated the long descending entrance corridor of TT 353, which lies ca. 425 metres from TT 192 (see image 18). The same knowledge was very likely obtained within the presumed quarries of el-Assasif from which Kheruef possibly created the open courtyard of his funerary monument.⁸¹⁰ However, the geology and the advantages it offered was probably only one aspect involved in the decision to move north, away from the 'appropriate' location at Qurnet Murai with its sightlines to the royal mortuary monument.⁸¹¹

⁸⁰⁶ A slightly earlier example of the pattern disruption is the tomb of the vizier Hepu (TT 66) which was constructed at the northern end of the Qurna hill, away from the mortuary temple of Thutmose IV south of the Ramesseum. Apart from Hepu and Ramose, the tombs of the 18th Dynasty viziers are placed more or less behind and above the mortuary temple of the ruler they served.

⁸⁰⁷ The larger concentration of tombs during the reign of Amenhotep III is in fact at Qurnet Murai according to Wasmuth (2003, 49).

⁸⁰⁸ A geological survey of this particular area has yet to be performed. However, see Dupuis *et al* (2011), fig. 6.

⁸⁰⁹ Dupuis *et al* (2011), fig. 6.

⁸¹⁰ Cf. C. Nims (1980), "The Tomb", 3 n. 17. In The Epigraphic Survey (Oriental Institute Publications Volume 102) *The Tomb of Kheruef. Theban Tomb 192*, 1-16.

⁸¹¹ For a discussion on the practice of geographically placing a private mortuary monument during the Middle Kingdom, see J. Richards (2005), *Society and death in ancient Egypt; mortuary landscapes of the Middle Kingdom*, 51. For the practice in Saqqara during the 5th Dynasty of the Old Kingdom, see the conclusions of M. Nuzzolo (2017), "Patterns of tomb placement in the Memphite necropolis", 287-289.

Diethelm Eigner argues that the layout of the tombs in general probably had more to do with a processional road from Deir el-Bahri running south in a straight line towards Medinet Habu: just east of TT 192 and just west of TT 47, passing the back (east) wall of Thutmose IV's mortuary temple and the front (west) wall of the temple of Amenhotep son of Hapu.⁸¹² Kampp criticises this idea because it ignores the mortuary temples along the edge of the fertile land.⁸¹³ She rather sees the choice of the valley floor during the reign of Amenhotep III as being due to the new conception of 'temple tombs' which needed much more space than was available in Qurnet Murai or on the Qurna hill.⁸¹⁴ The new conception does not, however, completely explain the selection of el-Assasif, el-Khokha, and the lower parts of Sheikh Abd el-Qurna as suitable locations for the five 'super tombs', but these five officials were not the only owners of large tombs to build in the area during Amenhotep III's reign. The lower top 25 tombs, TT 57, TT 63, TT 78, and TT 201 are also situated on the hills of Qurna and Khokha. As can be seen on image 19 and 20, the rest of the officials of the lower top 25 tomb also chose these two locations.

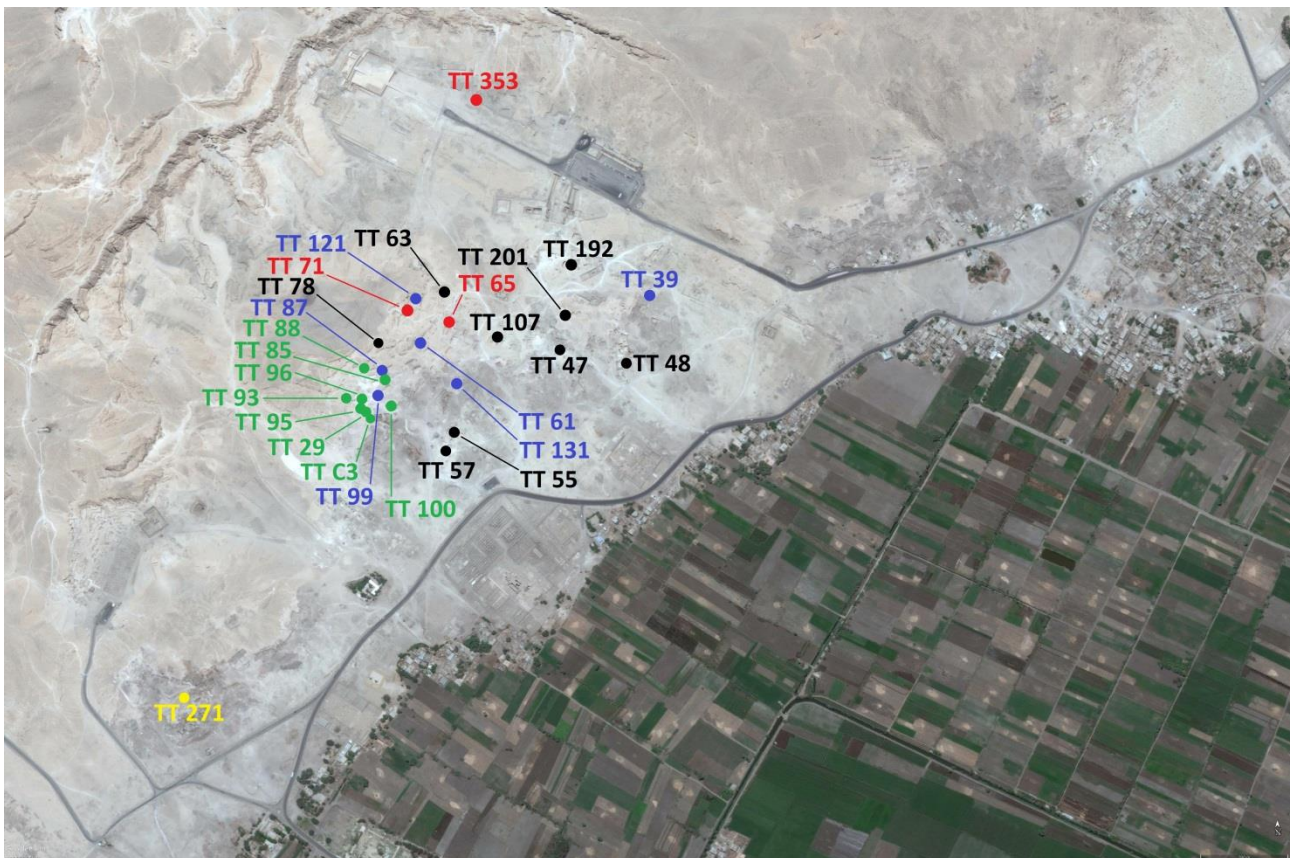


Image 19 – Geographical distribution of the top 25 tombs. Red colour indicates tombs from the reign of Hatshepsut, blue Thutmose III, green Amenhotep II, black Amenhotep III, and yellow the reign of Ay. Image from Google Earth.

Three of the four lower top 25 tombs from Amenhotep III's reign seem to be located close to those of the contemporary 'super tomb' owners, especially TT 57 and its proximity to TT 55. This could indicate similar

⁸¹² D. Eigner (1983), "Das thebanische Grab des Amenhotep, Wesir von Unterägypten: die Architektur", 48-50.

⁸¹³ Kampp (1996), 122 n. 620.

⁸¹⁴ Kampp (1996), 120.

reasons for choosing the area. The location of TT 78 at the very top of Sheikh Abd el-Qurna (see image 20) would seem to indicate an active choice of location over desired spatial volume. The owner of the tomb, Horemheb, possibly secured the location of the tomb already late in the reign of Amenhotep II, as he mentions in a tomb scene having served not only this king but also his successor, Thutmose IV, as well as Amenhotep III.⁸¹⁵ The scene could therefore not have been created before the reign of the latter king,⁸¹⁶ which means that decoration was at the very least going on at this late stage. The location of TT 78 both overlooks and is placed almost directly on an extended line of the axial orientation of the mortuary temple of Amenhotep II (see image 20), indicating a relationship to this ruler. The placement of the tomb of Puimre (TT39) away from the Qurna hill can in part be explained by him having served Hatshepsut on the construction of her valley temple before he served Thutmose III.⁸¹⁷ Puimre's tomb would thus be relatively close to the causeway running from the Deir el-Bahri mortuary temple to the valley temple.

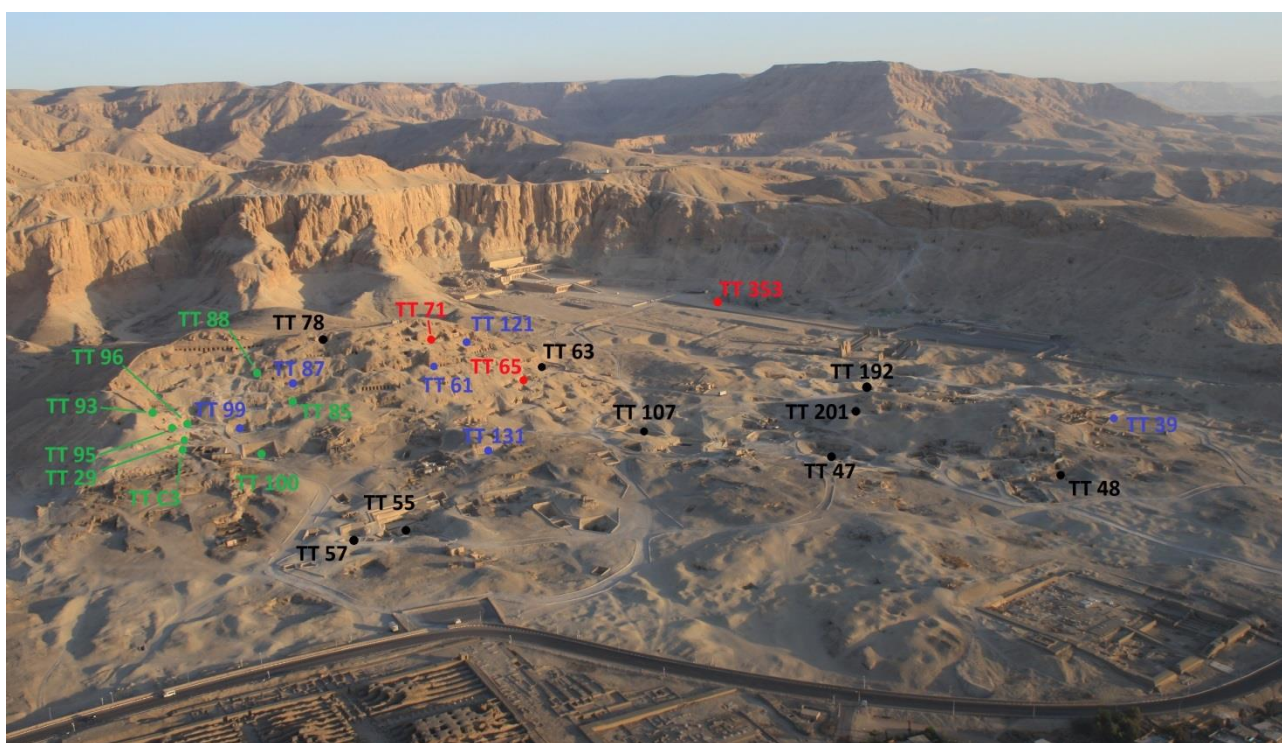


Image 20 – Topographic view of the geographical locations of the top 25 tombs. Tombs in Qurnet Murai and Dra Abu el-Naga are not shown. Note the mortuary temples of Amenhotep II and Thutmose III at the bottom right, separated by the modern road. Authors' photo.

Image 20 show the topographic distribution of the top 25 tombs. There is a tendency for the tombs of the earlier reigns to be located higher on the Qurna hill while those from the reign of Amenhotep III are located lower and away from the hill. Both image 19 and 20 illustrate that there was a preference for the three areas of the lower Qurna hill, el-Khokha, and el-Assasif in the reign of Amenhotep III, but other than a

⁸¹⁵ A. Brack & A. Brack (1980), *Das Grab des Haremheb, Theben Nr. 78*, Archäologische Veröffentlichungen 35, 9 + 83f.

⁸¹⁶ Kampp (1996), 316.

⁸¹⁷ N. de G. Davies (1922), *The tomb of Puyemre at Thebes, I*, 20-21.

possible geological advantage of better rock quality, the reason for placing the tombs here is somewhat unclear.

The placement of earlier tombs, including those outside the top 25 tombs, may also have had to do with existing pathways on the Qurna hill.⁸¹⁸ Some of these were created already in the Middle Kingdom,⁸¹⁹ but several new ones were created in the New Kingdom. Many of the 18th Dynasty tombs are conveniently placed next to the older pathways, ensuring the accessibility to both the workmen when construction was taking place and the priests and family members come to present offerings to the deceased.⁸²⁰ Nevertheless, because the Qurna hill has undergone many excavations, both the original construction of tombs and modern archeological investigations,⁸²¹ the landscape has changed significantly since the Middle Kingdom.⁸²² Therefore, the currently visible pathways may only be part of a larger network which is now either lost or covered by excavation debris or windblown sand.

Helck suggests that the reason that there are no New Kingdom tombs on the western and southern face of the Qurna hill is because such a location does not offer a line of sight towards the temple of Amun in Karnak.⁸²³ He further suggests that in addition to having a visual connection to the mortuary temple of the ruler, the tombs on the upper slopes of Sheikh Abd el-Qurna are oriented towards the landing place of the barque of Amun during the Valley Festival.⁸²⁴ While plausible, these suggestions do not offer sufficient explanation for the tombs on the valley floor. The larger of these tombs, i.e., the top 25, display a tendency towards a southern orientation, possibly towards the mortuary temples of Amenhotep III and thus compensating for their lack of proximity. Rather than focusing on the individual placement of each tomb within its immediate landscape,⁸²⁵ further study of the Theban necropolis as a single and coherent landscape is necessary. Considerations of the level of control over the placement of the tombs on behalf of the ancient Egyptian administration (see chapter 3.6.1 above) should be added to these studies.

4.6 - Amarna tombs

The following section focuses on the 33 tombs that line the northern cliffs and southern hills of the desert basin of Tell el-Amarna, the ancient city of Akhetaten. The Amarna tombs constitute a more complete set of tombs that are delineated both in geographical and diachronic terms. This is due to the unique historical

⁸¹⁸ Kampp (1996), 121.

⁸¹⁹ Strudwick (2016), 37-40.

⁸²⁰ Strudwick (2016), colour plate 3.

⁸²¹ N. de G. Davies (1927), *Two Ramesside Tombs at Thebes*, 34.

⁸²² Kampp (1996), 122.

⁸²³ Helck (1962), 237.

⁸²⁴ Helck (1962), 230.

⁸²⁵ This is a general tendency in Egyptology. Cf. Richards (2005), 49.

circumstances of the Amarna Period that led to the decision to create a new political and religious capital in the middle of Upper Egypt.⁸²⁶ When considered as a closed dataset, the Amarna tombs cannot shed light on the production output in a diachronic aspect, but they can reveal the potential capacity of the ancient Egyptians for producing rock-cut tombs.

The Amarna private tombs are found in connection to the new capital that the king Akhenaten founded in the region of the modern Tell el-Amarna. The tombs are labelled AT for Amarna Tomb followed by a number and in some cases a number and a letter, for example AT9 (the tomb of Mahu) or AT9a (the tomb of an unknown). There are 33 tombs, all of different sizes and none of them fully completed. This has probably to do with the fact that the reign of Akhenaten ended abruptly after about 12-14 years of occupation in Amarna and that the people moved away, many back to the old religious capital of Thebes. The private tombs are divided into two main groups: the North Tombs and the South Tombs geographically separated by several kilometres of desert and the Wadi where the tomb of the king and what is believed to be the tombs of other royalty is located.⁸²⁷ The numbering of the private tombs, however, is based on a geographical north to south method, i.e. AT1 is furthest to the north and AT25a is the furthest to the south.

The tombs constitute a smaller but also a more complete dataset than that of the Theban tombs. This is due to the fact that the Amarna tombs are all published in the same series, the *Archaeological Survey of Egypt – The rock Tombs of El Amarna I-VI* by Norman de Garis Davies, where each and every tomb is described with accompanying tomb plans, section drawings and scale measurements. Thus, there is no calculation of averages needed and the 33 tombs provide the full picture for the Amarna period in the new capital. The tombs are generally of the same size as the larger ones found in Thebes, however, the Amarna tombs are in many instances not completely excavated.

It has long been suspected that the workmen building the private tombs in Thebes and the workmen constructing the royal tombs in the Valley of the Kings were relocated to Amarna to apply their skills in a new setting.⁸²⁸ While the validity of this is still debated, there was a clear drop in private construction activities in the Theban area and very few of the Theban tombs can be ascribed to the reign of Akhenaten.⁸²⁹ If it is assumed that the workmen of the Theban private tombs were indeed moved to Amarna, then the above correlated figures (24 and 27) should be adjusted with the volumetric values for

⁸²⁶ For discussions regarding the move to Amarna, see for example Davies (1903), *The Rock Tombs of El Amarna, Part I*, 1-2; J. Van Dijk (2000), "The Amarna Period and the Later New Kingdom", 277-278; Kemp (2012), 35-46; Müller (2014), 154-167.

⁸²⁷ See for example B. Kemp (2012), *The city of Akhenaten and Nefertiti, Amarna and its people*, 158.

⁸²⁸ See for example Romer (1994), 217-218; A. Stevens (2012), *Akhenaten's Workers: The Amarna Stone Village Survey, 2005-2009. Volume I: The Survey, Excavations and Architecture*, 435.

⁸²⁹ See chapter 4.1.4 above for considerations on this.

the private tombs in Akhetaten. This is done in figure 32, showing the total volumetric production of each reign, and figure 33, showing the average yearly production rate from each reign.

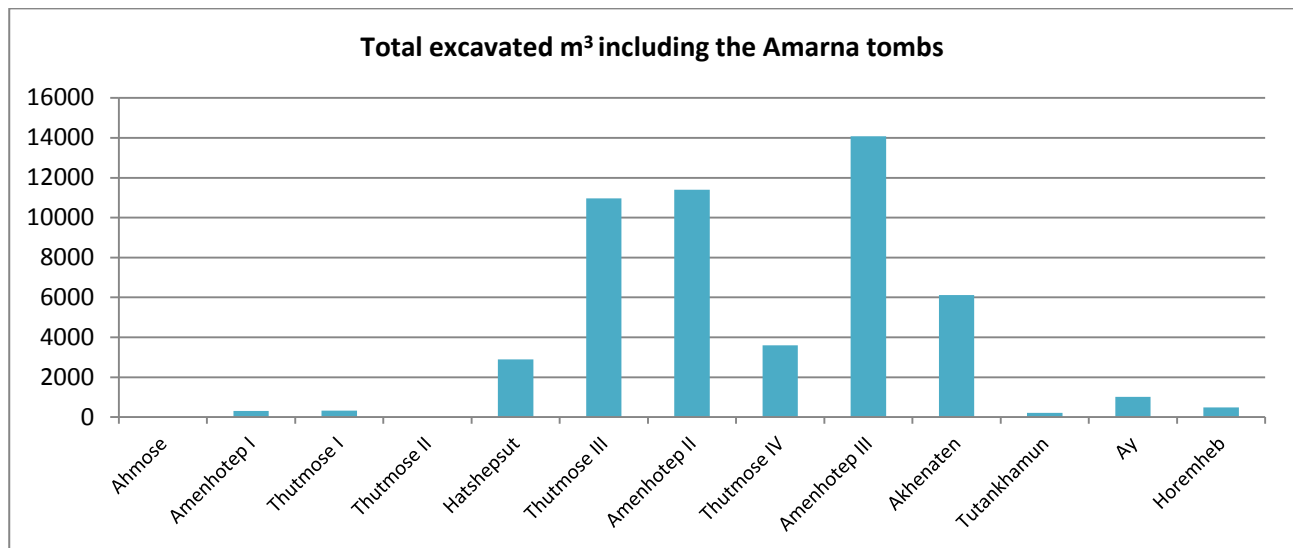


Figure 32 - Excavated size of the Theban and Amarna private tombs per reign of each king measured in cubic meters.

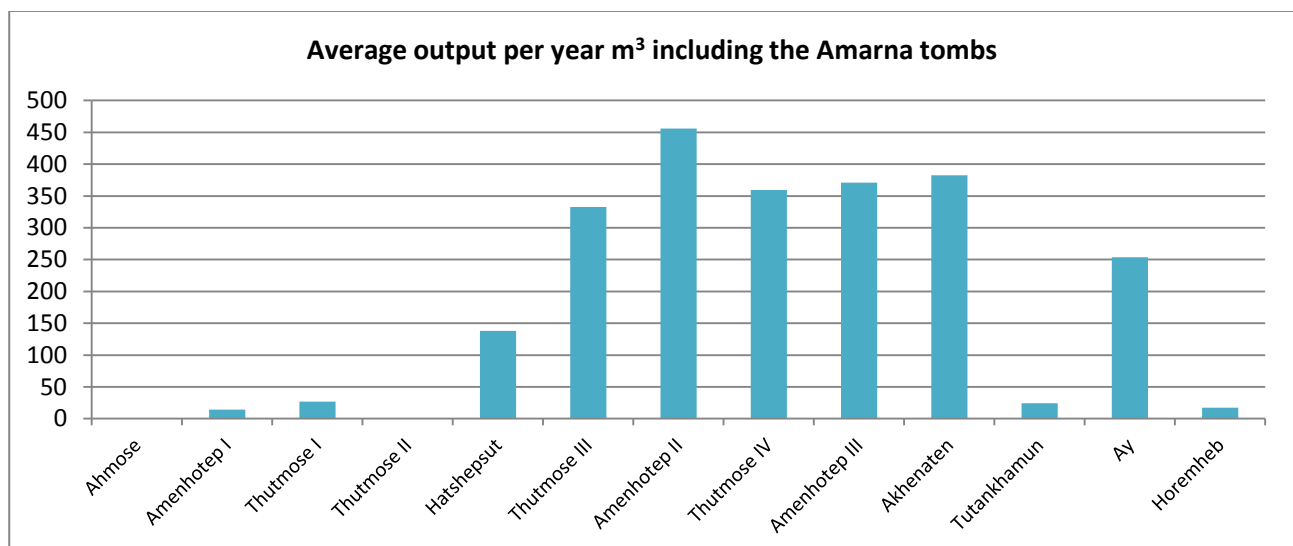


Figure 33 - Average rate of tomb production in Thebes and Amarna per reign of each king measured in cubic meters.

While none of the numerical values for the other kings of the 18th Dynasty changes when compared to figures 24 and 27, the values for the reign of Akhenaten do: they increase from 229.145 m³ in the Theban necropolis alone to 6121.31 m³ for both necropolises. The yearly production output in figure 33 shows that the tomb builders of Amarna outperformed the builders of the two preceding reigns, if not by much: from a yearly production output of 14.32 m³ measured in Thebes alone to 382.58 m³ per year when building the private tombs of the new capital. The two graphs of figures 32 and 33 show that the production of private tombs did not lessen under Akhenaten but increased, albeit in a new location.⁸³⁰

⁸³⁰ The blind spot is of course the fact that I do not include tombs from other locations and as such do not know the impact that the coming to power of Akhenaten had in for example Aswan, Abydos, or Saqqara.

While none of the Theban tombs can be said to be fully finished in their construction or decoration, this is much more evident with the Amarna tombs. The tomb of Ay, for example, consists of an entrance and a columned hall, the latter, while built on a grand scale, is only little more than halfway excavated, let alone fully decorated (see figure 36). The northern end of the hall has 12 free standing columns, most of which have been decorated, while the southern end, the “Southern Columns” (SC), only have one completely freestanding column (SC1) and two partially excavated ones (SC2-3). Of the remaining columns, assuming an equal and symmetrical number of the northern end was the goal, only four are partially visible as none have been excavated below the top third from the ceiling: One (SC4) has had its top third exposed on all sides; one has had three sides outlined except the eastern (SC5); another has had the western and northern sides delineated (SC6); and one have been preliminary delineated on the western side (SC7). While this demonstrates the stages in excavation and construction from the ceiling down, it also raises a number of questions as to why this hall, and by extension the presumed rest of the tomb, was not finished.⁸³⁴

⁸³⁴ Answers to these questions possibly include the starting point for work on this tomb and others, the possibility of the workmen only working on one tomb or several at any given time, etc.

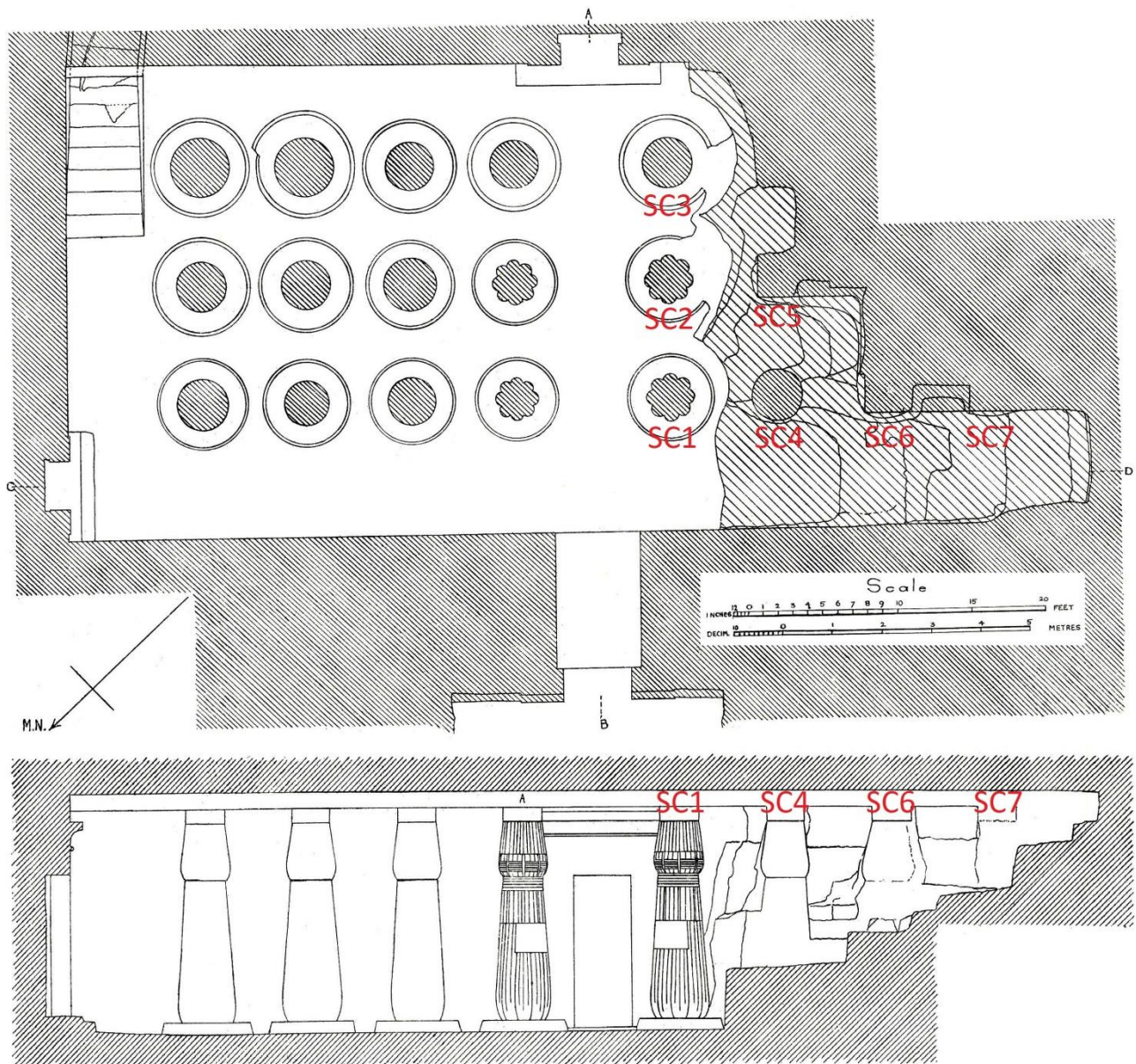


Figure 36 – Tomb of Ay (AT 25). Excavation drawings of plan and section C-D. From Davies (1908), plates XXII-XXIII.

The clearly unfinished tomb of Ay still has a volumetric value of 617.98 m^3 for the one columned hall, which would have exceeded 1000 m^3 if completed.⁸³⁵ As it is, AT 25 is on an equal footing with the above 500 m^3 ‘super tombs’ of Thebes and so are four other Amarna tombs; the tombs of Panehsy (AT 6), Tutu (AT 8), Meryra (I) (AT 14),⁸³⁶ and an unknown person (AT 16). This means that like the previous reign of Amenhotep III, the reign of Akhenaten had at least five officials with access to both the necessary workforce and resources to build their tombs on a very large scale, possibly gained through wealth, personal connections, and/or the responsibilities of office. That so many of the tombs are unfinished suggests that the tomb builders were very likely a single team, working bit by bit on all the tombs at the

⁸³⁵ Compare this with Ay’s royal tomb in the Valley of the Kings, which is of an equal size; 618.26 m^3 and 212.22 m^2 .

⁸³⁶ The volumetric value of AT 14 is calculated to be just below the 500 m^3 mark; 497.7 m^3 .

same time. That some tombs appear to be further along in their construction process suggests that there was a hierarchy among the tomb owners or at least that some were better at directing work to be done on their tombs.

4.7 - Amarna officials

Although displaying titles comparable to those found at Thebes, the private tomb owners of Amarna share fewer titles with each other than their Theban counterparts. This is partly explained by the fewer titles of each Amarna tomb owner compared to the top 25 tomb owners at Thebes, and partly by the fact that only 19 of the 33 tombs display names and titles of their owners at all. The scarcity of titles is also a result of the unfinished state of the Amarna tombs, both in terms of excavation and decoration. The shared titles of the Amarna officials are presented in table 7:

Quantity	Title	Translation	Category
6	<i>sd3wty-bity</i>	Sealbearer (of the King) (of Lower Egypt) ⁸³⁷	(I)
5	<i>imy-r pr (xx)</i>	Steward (followed by relation to the king or a specific royal estate) ⁸³⁸	(II.2)
4	<i>iri-p^ct h3ty-^c</i>	Hereditary Noble and Count ⁸³⁹	(I)
4	<i>smr w^cty</i>	Sole friend (of the king) ⁸⁴⁰	(I)
4	<i>t3y-hw hr wnm^t n nsw</i>	Fan-bearer on the Right Side of the King ⁸⁴¹	(I)
3	<i>imy-r k3wt (xx)</i>	Overseer of Works (followed by a specification) ⁸⁴²	(II.2)
3	<i>imy-r mš^c n nb t3.wy</i>	General of the Lord of the Two Lands ⁸⁴³	(II.4)
3	<i>imy-r pr</i>	Steward ⁸⁴⁴	(III)
3	<i>b3k tpy n (xx)</i>	Chief Servitor of (followed by a relation to either the king or the Aten) ⁸⁴⁵	(IV.1)

Table 7 - Shared titles among the Amarna officials occurring with at least three tomb owners.

⁸³⁷ Ahmes (AT 3), Meryra (AT 4), Penthu (AT 5), Panehsy (AT 6), Nakhtpaaten (AT 12), May (AT 14).

⁸³⁸ The following officials claim variations of the title: Huya (AT 1 - Steward of the Great Royal Wife, Tiye (*imy-r pr n hmt-nswt wrt ty*)), Ahmes (AT 3 - Steward of the Estate of Akhenaten (*imy-r pr n pr h-n-itm*)), Ramose (AT 11 - Steward of Nebmaatra (Amenhotep III) (*imy-r pr n nt-m3^ct-r^c*)), and May (AT 14 - Steward of Waenra (Akhenaten) in Heliopolis (*imy-r pr w^c-n-r^c m iwnw*)), and Paatenemheb (AT 24 - Steward of the Lord of the Two Lands (*imy-r pr n nb t3.wy*)).

⁸³⁹ Ahmes (AT 3), Meryra (AT 4), Nakhtpaaten (AT 12), May (AT 14).

⁸⁴⁰ Ahmes (AT 3), Meryra (AT 4), Penthu (AT 5), May (AT 14).

⁸⁴¹ Ahmes (AT 3), Meryra (AT 4), May (AT 14), Ay (AT 25).

⁸⁴² Tutu (AT 8 - (II.2) Overseer of All Works of His Majesty (*imy-r k3t nbt n hm=f*)), May (AT 14 - (II.2) Overseer of All the Works of the King (*imy-r k3t nbt nt nsw*)), and Paatenemheb (AT 24 - Overseer of Works of the Lord of the Two Lands (*imy-r k3wt n nb t3.wy*) and Overseer of Works in Akhetaten (*imy-r k3wt m ht-itm*)).

⁸⁴³ Ramose (AT 11), May (AT 14), Paatenemheb (AT 24).

⁸⁴⁴ Meryra (II) (AT 2), Ipy (AT 10), Any (AT 23).

⁸⁴⁵ Penthu (AT 5 - Chief Servitor of the Aten in the Temple of the Aten in Akhetaten (*b3k tpy n itm m t3 hwt p3 itm m ht-itm*)), Panehsy (AT 6 - Chief Servitor of the Aten in the Estate of Aten in Akhetaten (*b3k tpy n itm m pr itm m ht-itm*) and the possible abbreviation Chief Servitor of the Aten (*b3k tpy n itm*)), and Tutu (AT 8 - Chief servitor of Neferkheperura-waenra (the King) in...(damaged text)... of the Temple of the Aten in Akhetaten (*b3k tp n nfr-hpr.w-r^c-w^c-n-r^c m [...]* *pr itm m ht-itm*) and Chief Servitor of Neferkheperura-waenra in the Barge (*b3k tp n nfr-hpr.w-r^c-w^c-n-r^c m dpt*)).

Setting aside the four honorific designations that are also present among the Theban tomb owners, the Amarna officials share only five titles, three of which occur with different variations after the initial descriptive elements. Furthermore, four officials claim the title of Steward which may very well be an abbreviation for a more specific relation to various estates or temples. There is also a marked lack of titles that relate to the economic side of the temple sphere among the shared Amarna designations compared to Thebes. As with the Theban tomb owners described above, not all of the Amarna officials claimed any of the shared titles, but a few claim more than one. A short presentation of each of the 19 officials that had titles inscribed in their tombs is necessary to give a clearer impression of both the men behind the titles as well as of how the economic structure of Amarna varied from the Theban equivalent.

4.7.1 - The owners of the northern tombs

The six private tombs that line the northern cliffs overlooking the great bay of Amarna are referred to as the North Tombs (AT 1- AT 6), they are generally larger than the tombs found in the southern hills of the area (AT 7 – AT 25). The six North Tombs have a combined volume of 2180.7 m³ and an average of 363.5 m³. In comparison, the 27 South Tombs have a combined volume of 3711.4 m³ with an average of 137.4 m³. Nevertheless, the largest tomb and the third, fourth, and sixth largest of the Amarna tombs are found among the southern hills (see figure 34). On average, each of the northern tomb owners had about five titles recorded on the walls of their monuments, whereas the officials buried in the southern tombs average only three. The correlation of tomb size and number of titles suggests that the owners of the northern tombs were officials of higher status and economic capital.

Huya, the owner of AT 1,⁸⁴⁶ claimed two sets of titles in his tomb: titles relating to queen Tiye, mother of Akhenaten, and other titles. The latter set consists of the two titles Overseer of the Royal Quarters (*imy-r ip3t-nsw* (II.2)) and Overseer of the Treasury (*imy-r pr.wy-ḥd* (II.3)). The former set includes four titles: Overseer of the Royal Quarters of the Great Royal Wife (*imy-r ip3t-nsw n ḥmt-nswt wrt* (II.2)), Steward of the Great Royal Wife, Tiye (*imy-r pr n ḥmt-nswt wrt ty* (II.2)), Steward of the Estate of the King's Mother and Great Royal Wife, Tiye (*imy-r pr m pr mwt-nsw ḥmt-nswt wrt ty* (II.2)), and Overseer of the Treasury of the Great Royal Wife (*imy-r pr.wy-ḥd n ḥmt-nswt wrt* (II.2)). However, the first set could be interpreted, as Davies does,⁸⁴⁷ as being simple abbreviations for the titles of the second. In either case, being responsible for the queen mother's affairs was a large part of Huya's official duties and possibly the direct reason for him having a prominent tomb built in Amarna.

⁸⁴⁶ For the titles of Huya, see Davies (1903), *The Rock Tombs of El Amarna*, part III, pls. XII, XVII, XIX, and XX.

⁸⁴⁷ Davies *op. cit.*, 19.

The owner of Amarna Tomb 2, Meryra (II),⁸⁴⁸ was like Huya responsible for the quarters of a queen, that of Nefertiti. As Overseer of the Royal Quarters of Nefertiti (*imy-r ip3t-nsu n nfwt-ty-ti* (II.2)), Meryra (II) would presumably have had regular dealings with the royal consort and indirectly with the king himself. The financial running of the royal quarters was arguably related to the second title of Meryra (II), which was Overseer of the Treasury (*imy-r pr.wy-hd* (II.3)), a title that also brought him into regular contact with the Overseer of the Seal. The last title attested for Meryra (II) in his tomb is that of Steward (*imy-r pr* (III)), which may as indicated belong to the regional sphere.

Ahmes, the owner of AT 3, had all four of the honorific titles of table 7 inscribed in the tomb, as well as that of Steward of the Estate of Akhenaten (*imy-r pr n pr h-n-iti* (II.2)) and Overseer of the Court-house of the Lord of the Two Lands (*imy-r rwyf n nb t3.wy*).⁸⁴⁹ The last title may belong to the regional sphere of the administration, but as the king is mentioned, it may also relate to the royal sphere. Meryra (AT 4)⁸⁵⁰ also held the four honorific titles, but his most important title was that of High Priest of the Aten in the Temple of Aten in Akhetaten (*wr-m3w n p3 iti m pr iti m ht-iti* (IV.1)). The temple of Aten also plays a large role in the decoration of the tomb, which shows the layout of the temple and its many filled offering tables, as well as a herd of cattle and even ships moored at the river bank. These things would presumably have been under the authority of Meryra and thus belonged to the temple sector of the administration.

Claiming only the *sd3wty-bity* and the *smr wty* as honorific designations, the owner of AT 5, Penthu,⁸⁵¹ also held the title of Chamberlain (*imy-hnt* (II.2)), a well-attested title of both the New Kingdom and the Middle Kingdom. Quirke interprets it to mean “he who is in the Outer Palace”, thus placing the area of responsibility in the royal sphere.⁸⁵² In the regional sphere, Penthu claimed the title of Chief of Physicians (*wr swnw* (III)) and in the temple sphere he claimed the title Chief servitor of the Aten in the Temple of the Aten in Akhetaten (*b3k tpy n iti m t3 hwt p3 iti m ht-iti* (IV.1)). What the official duties of a Chief Servitor or Servant of the Aten entailed is not known, but the titles of the next tomb owner, Panehsy (AT 6),⁸⁵³ may indicate a general direction. Panehsy held a title very similar to that of Penthu, namely Chief Servitor of the Aten in the Estate of Aten in Akhetaten (*b3k tpy n iti m pr iti m ht-iti*). Panehsy also held the better-defined titles of Overseer of the Granary of the Aten in Akhetaten (*imy-r šnw t n p3 iti m ht-iti*) and Overseer of Cattle of the Aten (*imy-r ihw n p3 iti*), which are similar to the titles held by the Theban

⁸⁴⁸ For the titles of Meryra (II), see Davies (1903), *The Rock Tombs of El Amarna*, part II, pls. XXX, XXXI, and XXXVI.

⁸⁴⁹ For the titles of Huya, see Davies (1903), *The Rock Tombs of El Amarna*, part III, 32-33, pls. XXVII-XXIX.

⁸⁵⁰ For the titles of Meryra, see Davies (1903), *The Rock Tombs of El Amarna*, part I, 42, pls. XXV, XXX, XXXIV, XXXV, XXXVIII, and XXXIX.

⁸⁵¹ For the titles of Penthu, see Davies (1906), *The Rock Tombs of El Amarna*, part IV, 6, pls. II-IV.

⁸⁵² Quirke (2004), 34.

⁸⁵³ For the titles of Panehsy, who also held the honorific *sd3wty-bity*, see Davies (1903), *The Rock Tombs of El Amarna*, part II, 29, pls. IV, IX, and XXI.

officials in relation to the god Amun. They also indicate a financial area of responsibility in the temple sphere, and the Chief Servitor may have been responsible for the offerings presented to the god.

4.7.2 - The owners of the southern tombs

Located south of the royal wadi, the stone village, and the workers village, roughly in the middle of the Amarna cliff bay, the southern tombs are distributed over a few low hills.⁸⁵⁴ The northernmost of these tombs, AT 7 belonged to a man named Parennefer who claimed the rather humble titles of Washer of Hands (of the king) (*wꜥbt-ꜥwy* (II.1)) and Royal Craftsman (*ḥmww nsw* (III)).⁸⁵⁵ Compared to the number of titles found within the 92.3 m³ of AT 7, the next tomb (AT 8) and its larger capacity of 523.2 m³ also includes more varied titles. The owner of the tomb, Tutu, held an impressive range of titles which presumably would have enabled him to build the second largest of the southern tombs and the third largest private tomb in Amarna.⁸⁵⁶ Three of the titles have a financial connection to the king: Chamberlain (*imy-ḥnt* (II.2)), Overseer of all Commissions/Decrees of the Lord of the Two Lands (*imy-r wḏ.w nbt n nb tꜣ.wy* (II.2)), and Overseer of all Works of His Majesty (*imy-r kꜣt nbt n ḥm=f* (II.2)). One title arguably relates him to the vizier's official duties, under the authority of the Overseer of the Seal: Overseer of Silver and Sold of the Lord of the Two Lands (*imy-r ḥḏ nbw n nb tꜣ.wy* (II.3)). And finally, Tutu held three titles with a financial connection the temple of Aten and the king as a god: Overseer of the Treasury (Silver House) ... the Aten in the Temple of Aten in Akhetaten (*imy-r pr-ḥḏ [...] pꜣ itn m pr-itn m ḥt-itn* (IV.1)), (IV.1) Chief Servitor of Neferkheperura-waenra (the King) in...(damaged text)... of the Temple of the Aten in Akhetaten (*bꜣk tp n nfr-ḥpr.w-rꜥ-wꜥ-n-rꜥ m [...] pr itn m ḥt-itn* (IV.1)), and (IV.1) Chief Servitor of Neferkheperura-waenra in the Barge (*bꜣk tp n nfr-ḥpr.w-rꜥ-wꜥ-n-rꜥ m dpt* (IV.1)).

Mahu, the owner of AT 9, only claimed one title which is featured prominently in the decoration. He was the Medjay Leader of Akhetaten (*ḥry mḏꜣw n ḥt-itn* (II.3)) and as such probably the head of the security forces of the city.⁸⁵⁷ Ipy, the owner of AT 10, similarly only held one title, claiming only the unspecified office of Steward.⁸⁵⁸ The owner of AT 11, Ramose, held two slightly more impressive titles: Steward of Nebmaatra (Amenhotep III) (*imy-r pr n nt-mꜣꜥt-rꜥ* (II.2)) and the shared title listed in table 7, General of the Lord of the Two Lands (*imy-r mꜣꜥ n nb tꜣ.wy* (II.4)). His tomb, however, was not finished because of an intersecting broad vein of gravel that put further excavation and enlargement at risk, and the construction

⁸⁵⁴ Cf. Kemp (2012), 39 and fig. 7.26.

⁸⁵⁵ Cf. Davies (1908), *The Rock Tombs of El Amarna, part VI*, 6, pls. III and VII.

⁸⁵⁶ Davies *op. cit.*, 15, pls. XII, XIV, XV, XIX, and XX.

⁸⁵⁷ For the titles of Mahu, see Davies (1906), *The Rock Tombs of El Amarna, part IV*, pls. XVI-XVIII, XXI-XXIX.

⁸⁵⁸ Cf. Davies (1906), pls. XXXII and XXXIII.

of the tomb was abandoned without even straightening the walls.⁸⁵⁹ A similar unfinished state of construction is found in AT 12 which belonged to Nakhtpaaten, who claimed the two honorific titles of *iri-pr^ct ḥꜣty-^c* and *sdꜣwty-bity*, as well as being Vizier (*tꜣty* (II.3)).⁸⁶⁰ Davies speculates that Nakhtpaaten suddenly received the title and, learning from history, abstained from planning a tomb too large, but whether or not this is the case, AT 12 is definitely unfinished. Perhaps having had more time for construction at his disposal, Neferkheperuhersekheper, the owner of AT 13, had a grander architectural plan in mind than Nakhtpaaten and made further progress, but ultimately the tomb remained only half finished. As he claimed the office of Mayor of Akhetaten (*ḥꜣty-^c n ḥt-itn* (III)),⁸⁶¹ he would arguably have been located high within the social structures of the city and would presumably have had personal connections to the king, who both founded and lived in Akhetaten. This is perhaps reflected in the quality of the excavated parts of the unfinished tomb, including the columns, which Davies labels as “*one of the most pleasing examples of rock-architecture in Egypt*”.⁸⁶² Having access to skilled stone cutters was possibly one of the prerogatives of the Mayor of Amarna.

The owner of Amarna Tomb 14 was a man named May, who among others claimed the four honorific titles listed in table 7.⁸⁶³ In the royal sphere, May claimed further shared titles for Amarna officials (II.2), the titles of Steward of Waenra (Akhenaten) in Heliopolis (*imy-r pr w^c-n-r^c m iwnw*), Steward of Sehetep-Aten (*imy-r pr n shꜣp-itn*),⁸⁶⁴ and Overseer of all the Works of the King (*imy-r kꜣt nbt nt nsw*). In relation to the military (II.4), he claimed the shared title of General of the Lord of the Two Lands (*imy-r mš^c n nb tꜣ.wy*), and in the temple sphere (IV.1), he claimed to be Overseer of Cattle of the Estate of Ra in Heliopolis (*imy-r iḥw n pr r^c m iwnw*). These titles indicate that May ranked highly in Amarna society and he would presumably also have had a similar status in Heliopolis.

Suti, the owner of AT 15, only claimed the title of Standard-bearer of the Guild/Department of Neferkheperura Waenra (Akhenaten) (*tꜣy-sryt n pꜣ-sꜣw n nfr-ḥprw-r^c w^c-n-r^c*),⁸⁶⁵ which does not seem to relate so much to the army as to a specific part of the palace administration.⁸⁶⁶ Also part of this sphere of the administration was the owner of AT 19, Satau, who was Overseer of the Treasury of the Lord of the Two Lands (*imy-r pr ḥꜣ n nb tꜣ.wy* (II.3)),⁸⁶⁷ similar to Meryra (II) described above. The owner of AT 23, Any, claimed the unspecified shared title of Steward (*imy-r pr*) as well as the title Scribe of the Offering-table of

⁸⁵⁹ Davies (1906), 21.

⁸⁶⁰ Davies (1908), *The Rock Tombs of El Amarna, part V*, 12-13.

⁸⁶¹ Cf. Davies (1906), pl. XXXVII

⁸⁶² Davies (1906), 23.

⁸⁶³ For the titles of May, see Davies (1908), 4-5, pls. II and IV.

⁸⁶⁴ Davies (1908), 5 n. 4, argues that this might be another name for Akhenaten or a member of the royal family.

⁸⁶⁵ Cf. Davies (1906), *The Rock Tombs of El Amarna, part IV*, pl. XXXIX.

⁸⁶⁶ For the use of *sꜣw* as ‘department’ see Hannig (2006), 1018.

⁸⁶⁷ Cf. Davies (1908), *The Rock Tombs of El Amarna, part V*, pl. XV.

the Lord of the Two Lands (*sš wdhw n nb t3.wy*),⁸⁶⁸ the latter presumably being on a lower hierarchical level than the former. Having only completed the entrance of his tomb (AT 24), Paatenemheb nevertheless had the following four titles inscribed on the door jambs: Steward of the Lord of the Two Lands (*imy-r pr n nb t3.wy*), Overseer of Works of the Lord of the Two Lands (*imy-r k3wt n nb t3.wy*), Overseer of Works in Akhetaten (*imy-r k3wt m ḥt-ītn*), and General of the Lord of the Two Lands (*imy-r mšꜥ n nb t3.wy*).⁸⁶⁹ All four titles are among the shared designations listed in table 7 and all relate to the palace sphere of the administration. The last of the Amarna tomb owners, Ay (AT 25), also had the largest tomb planned, although it was never finished, as described above in chapter 4.6.1. Before advancing to kingship and constructing a tomb in the Valley of the Kings, Ay claimed the titles of Fan-bearer on the Right Side of the King (*t3y-ḥw ḥr wnmt n nsw (I)*), Overseer of all Horses/Entire Cavalry of His Majesty (*imy-r ssmt nb n ḥm=f (II.4)*), and God's Father (*it-nṯr*).⁸⁷⁰ The latter title most likely did not refer to a priestly function but rather to the fact that Ay was the father-in-law of Akhenaten.

4.8 - The Amarna tombs in comparison to Thebes

The three parameters of size, production output and titles of tomb owners must be addressed individually when comparing the Theban and Amarna private tombs. The available material from the Theban necropolis allows for the calculation of an estimated average tomb size of 236.9 m³, whereas the Amarna tombs average 178.6 m³. This difference can be explained by the relatively larger number of tombs in Amarna which are not completely excavated, which in turn suggests that these tombs were generally planned as larger tombs but never reached the set goals, most likely because of the death of Akhenaten. The average excavation output in both Thebes and Amarna from the reigns of Thutmose III until Akhenaten (see figure 33), a period of about 120-122 years, seems to be relatively stable and near 375 m³ per year. The four reigns before the Amarna period witness the highest output in Thebes during the 18th Dynasty, but the high level of production continues in the new capital. At the same time, the output drastically declines in Thebes, which indicates that the people skilled at excavation started work elsewhere. Furthermore, a new and inexperienced crew of workers would presumably have had a longer period of learning the craft and a much lower rate of production, perhaps similar to the production output during the reign of Hatshepsut in Thebes.

Considering the titles of the owners of the 25 largest Theban tombs and the owners of the Theban 'mini tombs', the titles of the Amarna officials are different, yet still comparable. As described above (see 4.3) the

⁸⁶⁸ Cf. Davies *op. cit.*, pl. XI.

⁸⁶⁹ For the titles of Paatenemheb, see Davies (1908), *The Rock Tombs of El Amarna, part V*, 15, pl. XIII.

⁸⁷⁰ Cf. Davies (1908), *The Rock Tombs of El Amarna, part VI*, 24, pls. XXIV, XXV, and XXXI-XXXIII.

titles of the 'mini tomb' owners seem to be at a lower hierarchical level at Thebes and this is also the impression when their titles are compared to the titles of the Amarna officials. Therefore, the latter seem to have had with better access to resources than the former. Nevertheless, comparing the top 25 Theban tomb owners with the 19 Amarna tomb owners with titles is not straightforward. The Theban officials span the reigns from Hatshepsut to the reign of Ay, a period of about 155 years, which includes the 16 years of the reign of Akhenaten to which the titles of the Amarna officials date. Apart from the unspecified and possibly abbreviated title of Steward (*imy-r pr*) (see 4.2.1 above), which three Theban and four Amarna officials claimed, only the titles of Vizier and Overseer of the Treasury (silver house(s)) were used in the same form(s) at both places. The title of Overseer of Works also occurs among both groups of tomb owners, but with a different specification for each official, for example, as Overseer of all Royal Works (*imy-r k3t-nsw nbt*) from Thebes (Senenmut) and as Overseer of all Works of his Majesty (*imy-r k3t nbt n hm=f*) from Amarna (Tutu).

The officials and private tomb owners of Amarna held a wide variety of titles and functions, but the majority had a relation to the palace administration or the king himself. Compared to the titles that have a connection to temples, either in Amarna or elsewhere, the palace titles outweigh the temple designations by 3:1. Among the top 25 tomb owners of Thebes, the distribution is much closer to an equal balance although with a slight advantage for the temple titles (see also 4.2.1 and table 5). The level within the temple administration at which the titles of the Amarna officials seem to have operated also appears to have been generally lower than those found among the Theban officials who owned the 25 largest tombs. While there are a High Priest of the Aten (Meryra), an Overseer of the Granary and Cattle of the Aten (Panehsy), and an Overseer of Cattle in the Estate of Ra in Heliopolis (May) attested in Amarna, these are outweighed by the variations of Chief Servitor of the Aten, which suggests a more practical role rather than an administrative and economically responsibility.

5. The Socioeconomics of New Kingdom Tomb Construction

In this chapter, I will contextualise the results and arguments from the previous chapters to describe the interrelation between tomb construction and Ancient Egyptian social and economic realities. Based on the results of the analysis, I will provide a method for estimating the socioeconomic factors involved in the construction of other funerary monuments, where textual evidence describing their construction is scarce or altogether missing. The case studies and the study of tomb size will be compared in order to provide a new perspective, both on the texts and on the overall impression of the ancient Egyptian economy and society that these give. It is important not to over-generalise the texts discussed in the case studies, as they are among the only known examples that describe tomb construction. It is therefore also important to be aware of the limitations of the interpretations of the material while acknowledging its potential. Seeing the textual material through the lens of the tomb size statistics will lead to a new understanding of not only the texts themselves but also their usability when studying ancient Egyptian economic history.

5.1 - Tomb sizes and the Egyptian economy

The rock-cut tombs of ancient Egypt collectively represent a vast economic investment, the extent of which potentially can be measured. The challenge is figuring out what to measure and why. This thesis argues that the economic investment can be differentiated into a number of different categories which can be measured individually when the various variables of tomb construction are considered and described.⁸⁷¹ The variables at a basic level are only the following four: size, human resources, time, and production output.

Size in the context of the rock-cut tombs means the volume of rock that has been excavated and removed. This is also the most reliable variable since it is based on repeatable measurements of the archaeological material. The second variable, human resources, refers to the number of workers that excavated and helped removing material from the excavation. The third variable, time, is the overall length of time that a tomb construction project spans, specifically the time it took to excavate a tomb. The final variable, production output, is the excavated volume measured over time. These variables are thoroughly interconnected and intertwined. The complexity is increased by sub-variables, like providing workers with tools, other supplies and sustenance/wages.

⁸⁷¹ For a different approach at determining variables in socioeconomic data analysis, see S. L. D. Katary (1989), *Land Tenure in the Ramesside Period*, 29-31.

5.1.1 - Sub-variables

The sub-variable of tools used in the building process is further dependent on the geology of the rock, i.e., its physical and chemical composition. Hard stone generally requires hard tools such as rock hammers or metal chisels, whereas soft and loose stone can be worked using simple wooden scrapers. Hard stone is better for straight and stable surfaces on which decoration can be applied, but also requires more specialised tools, which themselves require a substantial production investment and further reinvestments in the form of repairs. This is exemplified by the copper chisels: first, the copper had to be mined, smelted and refined before being shaped into a chisel. Worn down by repeated use, it would need to either be re-cast or sharpened. Both the initial and secondary process requires not only specialised craftsmen, but also fuel for fire and other tools for working the copper. The Egyptians were well aware of this investment and at Deir el-Medina, the administrators therefore kept a running record of the metal tools, which workmen were using them and where.⁸⁷²

Excavation progress in harder stone is slower than in loose stone but requires less time for repairs after the initial cut, using mortar and plasterwork, than tombs constructed in loose stone and gravel. Tombs such as Senenmut's TT 71 needed large quantities of mortar and stone flakes to repair and stabilise the walls and ceilings, in order to provide surfaces that were sufficiently even for decoration. Plaster and mortar represent a large proportion of the investment in tombs with poor quality stone, if not in the price of the equipment and materials utilised, then in time spent producing and applying it.

The choice of location and desired proportions for a tomb thus influenced the sub-variables of tools and supplies directly. As seen in the Senenmut ostraca, the number of workmen at the building site seems to have varied significantly (see chapter 3.6.3 and 3.6.4 above). Many workmen could more efficiently be employed at the very beginning of the building process where the clearing and outlining of the hillside was done. Later, when the first parts of the tomb had been excavated, a natural limit to the number of workmen who could work at the same time in the internal space would reduce the number of workmen needed on site. Thus the choice of location had an indirect impact on time, as the latter was dependent on the numbers of workmen utilised.

The workmen who continued excavating and working the rock inside the expanding tomb were skilled stoneworkers, whereas the large crew doing the clearing outside was mostly made up of unskilled labourers (see chapter 3.5.1). Here, unskilled refers to lack of skills in stonework. It is, however, conceivable that the unskilled labourers included other craftsmen who were not directly involved in the building process but rather in the production of supplies, for example plaster, or production of food. Direct evidence for logistical support is missing, but the situation may have been comparable to the *smdt*-workers at Deir el-

⁸⁷² See, for example, the ostraca recording the issuing of chisels in Dorn (2011), 398-403 (nos. 623-641).

Medina during the Ramesside Period who were utilised by the village workmen as e.g. watercarriers and washermen may be considered a parallel to the situation in the 18th Dynasty.⁸⁷³ O. Berlin 12654 (vso. 1-3) describes that at some point during the 20th Dynasty,⁸⁷⁴ the vizier-in-office gave the order to cut the number of workmen of the village in half, from 120 to 60. The people who were not allowed to stay on as workmen were to become *smdt*-workers.⁸⁷⁵

The sub-variables of sustenance or food rations that fall under the human resource variable do not figure in the Senenmut ostraca. Whether or not this is due to the workmen and labourers being paid by other projects at other sites, e.g. the temple building in Deir el-Bahri, it would nevertheless have been an important part of the logistics. The quantity of grain for food rations gathered by Buqentuf in the Saqqara Dossier would be sufficient for a crew of about 25 workers for a month, but the number of workers is never revealed within the texts. The notion that there would have been a precise number of skilled and unskilled workmen assigned to the tomb building projects of Senenmut and Mai is not supported by the textual evidence.

The composition of the three sub-variables of tools, supplies, and sustenance differs for each individual tomb because they depend on a number of additional variables, which include but are not limited to the geology, the historical setting and the economic capabilities and social status of the commissioner of the tomb. The construction scale baseline described in chapter 4.1.1 offers an estimate for the average production time for a group of tombs based on two key numbers: the number of years within which the group of tombs was constructed and the combined volumetric value of the same tombs. The more precise the two numbers are, the more accurately the prediction for an average construction time for a single tomb becomes. It is nevertheless worth noting, that the larger a tomb is, the longer it took to construct it, and because of this longer timeframe, more variables and sub-variables are likely to have influenced the construction process.

One would expect the larger tombs to belong to men with higher social and economic standing than those with smaller tombs. While this division can indeed be observed when comparing the tomb owners of very large tombs to those with very small tombs, as chapter four shows for the 18th Dynasty Theban private tombs, the closer in size the tombs are to each other, the less apparent the pattern of social differentiation

⁸⁷³ The *smdt*-workers have been attested as far back as the First Intermediate Period on a stela belonging to an Overseer of the *smdt* (*imy-r smdt*) at Nag ed-Deir. D. Dunham (1937), *Nag ed-Dêr Stelae of the First Intermediate Period*, 43-44, pl. XIII. For an attestation of *smdt*-workers from the Middle Kingdom, see D. Valbelle (1991), "Les plus anciennes listes connues de personnel auxiliaire (*smdt*) : les tablettes hiératiques CGC 25367 et 25368".

⁸⁷⁴ For the dating of the ostraca to the reign of Ramesses VI, see R. Demarée and J. Janssen (1982), *Gleanings from Deir el-Medina*, 138 n. 'a' + 140, and for a date in the reign of Ramesses V, see J. Janssen (1997), *Village Varia*, 136.

⁸⁷⁵ Černý (1973a), 185.

between tomb owners becomes. There are several potential explanations for this.⁸⁷⁶ A tomb owner may have chosen a site in the necropolis where there was only enough physical space to accommodate a smaller tomb, or to build less lavishly than his social status and wealth permitted.⁸⁷⁷ A tomb owner or his family may not have been particularly wealthy or politically influential, but may nevertheless have had access to the tomb builders themselves or the people put in charge of them, and as a favour or repayment had a tomb excavated and decorated. Nakht, the owner of TT 161, might be an example of such an arrangement. His tomb portrays a high level and quality of decoration,⁸⁷⁸ while his principal title as “Gardener of Divine Offerings of Amun” (*kꜣrty n ḥtp nꜥr n imn*)⁸⁷⁹ suggests a relationship to the temple of Karnak, but at a lower level than an Overseer, Steward, or similar.

5.1.2 - Titles in tombs

Apart from the size of the tomb, the only way to gauge the social status of a tomb owner is by analysing the titles he claimed. The main problem with this approach is that our understanding of the titles and their suspected areas of responsibility is very tentative. The uneven distribution of titles on other monuments and objects belonging to the tomb owner highlights another problem for the understanding of the importance and usability of ancient Egyptian titles.⁸⁸⁰ This is further complicated by not knowing whether a specific title was merely ceremonial or whether it represented actual responsibilities and whether it gave the titleholder access to economic resources or political influence.⁸⁸¹

There is even a possibility that titles were given or inscribed on tomb walls on behalf of the deceased in order to raise his status in the afterlife. This is the case in a tomb from the Sixth Dynasty at Deir el-Gebrâwi, where the nomarch Djau not only constructed a tomb for both himself and his lower ranking father bearing the same name, but also asked the king to award the title of nomarch (*ḥꜣty-ꜣ*) to the father posthumously.⁸⁸² The inflation of titles in tombs was something that the Egyptians themselves were aware of. Laurent Coulon demonstrates this in his article on the truthfulness of Egyptian autobiographies by focusing on the term “necropolis functions/titles” (*ỉꜣwt ḥrt-nꜥr*).⁸⁸³ In several examples that include the First Intermediate Period

⁸⁷⁶ For a discussion of the reasons behind the choice of location for tombs in the New Kingdom, see J. S. G. Auenmüller (2014), “The Location of New Kingdom Elite Tombs”. In *SAAC* 18, 171-193.

⁸⁷⁷ Both these considerations are exemplified by the tomb of the 6th Dynasty vizier Hesi at Saqqara (see chapter 4.5). Chauvet (2007), 317.

⁸⁷⁸ M. Werbrouck (1929), *La tombe de Nakht*, 8.

⁸⁷⁹ Manniche, Lise (1986), “The Tomb of Nakht, the Gardener, at Thebes (No. 161) as Copied by Robert Hay”. In *JEA* 72, 55-78.

⁸⁸⁰ See 4.2 above.

⁸⁸¹ As pointed out by Papazian (2012), 29-30, regarding the reliance on titles as a basis for studies of administrative aspects of the Old Kingdom.

⁸⁸² Urk. I, 147, 13-16. See also Eyre (1987a), “Work and the Organisation of Work in the Old Kingdom”, 23-24.

⁸⁸³ L. Coulon (1997), 113, n. ‘k’.

tomb of Ankhtify at Mo'alla, the use of the term in a negative confession style illustrates how unreliable the titles in tomb had become. In his autobiography Ankhtify announces or confesses: "I say all this in truth, not (as) 'necropolis functions/titles'!" (*dd(=i) nn r-dr m wn-mꜣ n-š iꜣwt nt hrt-ntr*), highlighting the issue of the believability of titles in funerary contexts.⁸⁸⁴

Furthermore, it is not understood whether the titles could be claimed by men with sufficient economic and political capital, or if the men had to be appointed to the titles that gave access to such capital. To this already muddled image one may add the condition that titles very likely represented different areas of responsibility in different periods of time, in which there might have been regional and institutional variations as well.

The variation in volumetric tomb size does, however, enable a differentiation between levels of titles, albeit, and as already mentioned, only at the extreme ends of the spectrum or for titles that were claimed by multiple tomb owners within a set size range (see 4.3 and 4.8 above). The latter titles, which would seem to be shared among the group, are the titles that on the one hand are more likely to represent real economic and political capital, and on the other hand illustrate the link between tomb size and use of institutional power. The institutions with which the titles are affiliated were part of economic spheres that operated independently on a day-to-day basis, but which ultimately were dependent on the overarching palace sphere that centred on the king.

5.1.3 - Imperial economy and household relations

As outlined in the introduction (1.2.4) I consider the ancient Egyptian economic and socio-political realities to be thoroughly interconnected. This is because the institutions behind the realities were as much shaped by the social networks on which they were founded and within which they operated, as by the power they wielded.⁸⁸⁵ It was the social relations of the individuals of each institution that shaped and defined the economic and political impact that the institution ultimately wielded, and vice versa. Any model that encompasses the many levels and spheres and their complex interconnections in the ancient Egyptian economy has to be flexible, in order to be applicable to the diverse source material. The economic model that currently encompasses the most aspects, including those alluded to by the titles and affiliations of the Theban private tomb owners, is the Household and Market model described by David Snell.⁸⁸⁶ *"The basic proposal is that economies are best understood as collections of individual households in which members*

⁸⁸⁴ Coulon (1997), 117, no. 9. See also nos.: 3, 4, 5 where the use of the term *iꜣwt hrt-ntr* is meant as 'lies' or 'untruth'.

⁸⁸⁵ Dobbin (2005), 45.

⁸⁸⁶ Snell (1997), *Life in the Ancient Near East*, 154-158.

are sustained socially and economically with little regard to their abilities to produce. The ways those households interact are markets, networks of knowledge about what is available and at what cost."⁸⁸⁷

Describing the levels and sectors of the Egyptian economy as individual households helps illuminate the interconnectivity between them. Just as a family household is never completely self-sufficient in practice, especially when it is situated in a village or communal setting, no institution can be said to be fully self-sufficient. That is because institutions, like family households, are comprised of a number of individuals who invariably develop their own personal networks which combined make up the bulk of social networks for both the institutions and family households.⁸⁸⁸ However, the connections need to be maintained and reaffirmed in order to function and have any valid meaning for the parties involved. For ancient Egypt, this is illustrated by the existence of a number of Middle Kingdom letters written by or for a man named Heqanakht, who continuously communicated with his family household with instructions on various topics.⁸⁸⁹ The point is that Heqanakht continuously reaffirmed his social ties with, and authority over, his family and estate.⁸⁹⁰

The high transactions costs, i.e., the distances between households and the necessary investment in transport in order to overcome the distance, meant that the ancient markets were far less stable and reliable than modern versions.⁸⁹¹ However, the transport of goods between households in Egypt could be achieved at a fairly low cost by using the river Nile. I would argue that the unique geographical setting of Egypt provided relatively easy access to markets that were situated well outside a family household's immediate zone of influence which could be walked or travelled by donkey within a day. The transaction cost for the household would be relatively low: a boat of sufficient size, which primarily functions as a fishing boat, and a small number of family members to work the boat and load and unload goods, as well as to provide a level of security. Sustenance for these family members could be transported along with the goods or provided by fishing and fowling while travelling. The journey north on the Nile is inexpensive because of the flow of the river, but southwards requires an investment either by rowing or having invested in the fabrication of a mast and sail. The real expense for a household capable to meet the above criteria was time, time that the family members were away from the household and not contributing to its upkeep. The same is of course true for households throughout the ancient Near East that Snell describes,⁸⁹² but travelling usually entailed overland journeys which required larger investments in time and resources, for pack animals as well as humans needed to transport the goods.

⁸⁸⁷ Snell (1997), 158.

⁸⁸⁸ The reverse is of course also the case and it is possible to inherit connections and networks from older generations.

⁸⁸⁹ Allen (2002), 105-117.

⁸⁹⁰ Or rather that he meant to, as the letters were never dispatched to Heqanakht's family. Cf. Allen (2002), 121.

⁸⁹¹ Snell (1997), 157.

⁸⁹² *Ibid.*

New Kingdom institutions functioned according to the same principles as family households that were constantly interacting and possibly even competing with each other. The institutions were, however, all subordinate to the king, who appointed the key officials, and as a result of this, the differentiation between the individual institutions becomes difficult. In his study on the usage and sharing of transport ships between temple and state (i.e. royal) institutions, E. Castle concludes that the distinction between the two institutional types is unclear.⁸⁹³ This is, as Castle argues, because evidence shows that Egyptian officials from royal institutions were responsible for collecting temple income and at the same time that several temple institutions cooperated between themselves as well as with the royal institutions to achieve an effective use of resources. Castle writes: *“An overall impression is gained of a highly stratified administrative structure separated vertically into contiguous departments of Temple and Crown with lateral movement of officials common. The situation is compounded by the changing political relationship between the Crown, the military and the High Priesthood of Amun during this period”*.⁸⁹⁴ The same impression of a stratified administrative structure with almost fluid lateral movements between sections is seen in the titles of the ‘super tomb’ owners in the 18th Dynasty, and there does not seem to be any hindrance to an official representing both the interests of the king and the temple of Amun, arguably because these interests aligned.

The overlapping tendencies of both spheres of interest can be seen already in the 12th Dynasty, in the Middle Kingdom, where it was initiated by the king in an attempt to limit the power of the regional nomarchs.⁸⁹⁵ As such, all the major towns during that period were administered by nomarchs, or Governors, who also held priestly titles such as Overseer of Temples or Overseer of Priests, but the three titles together were never held by any one person.⁸⁹⁶ For example, the owner of tomb BH 2 at Beni Hasan, Amenemhet, held both the title of Nomarch of the Oryx-Nome (*ḥrī-tp ʿ3 n m3-ḥd*) and Overseer of the Priests of Khnum, Lord of Herwer (*imy -r ḥmw-ntr n ḥnm nb ḥr-wr*), but was not Overseer of Temple(s).⁸⁹⁷ He was, however, deferring to the king by managing and delivering revenue for the ruler.⁸⁹⁸ By the time of Senwosret III, the title of governor/nomarchs disappears, replaced by the lesser title of mayor (*ḥ3ty-ʿ*).⁸⁹⁹

The leading role that Thebes played in the expulsion of the Hyksos at the end of the 17th Dynasty meant that the local and relatively small temple of Amun rose in economic power to become one of the most

⁸⁹³ E. W. Castle (1992), “Shipping and Trade in Ramesside Egypt”, 270.

⁸⁹⁴ *Ibid.*

⁸⁹⁵ G. Callender (2000), “The Middle Kingdom”, 175.

⁸⁹⁶ W. Grajetzki (2006), *The Middle Kingdom of Ancient Egypt*, 113. Quirke (2004), 111-112.

⁸⁹⁷ P. E. Newberry (1893), *Beni Hasan, Part I*, 9-38.

⁸⁹⁸ C. Eyre (2008), “Economy and Society in Pharaonic Egypt”, 724.

⁸⁹⁹ Callender (2000), 175.

important religious facilities in Egypt during the 18th Dynasty.⁹⁰⁰ Every succeeding ruler of the new dynasty added their own architectural elements to the temple and is thought to have donated riches and land to the temple estates, as was done in the Ramesside period.⁹⁰¹ This was in large part possible due to the ever expanding area over which Egypt held sway in foreign regions and the economic benefits gained through military domination.

The 18th Dynasty saw the establishment of an Egyptian empire with vassal states paying tribute.⁹⁰² The conquests of especially Thutmose I and Thutmose III expanded the Egyptian territory considerably, as well as the zone of influence that was not directly under Egyptian control. The influx of goods through payments of tribute from foreign vassal states was considerable.⁹⁰³ The amount of gold and silver that was available outside the palace and temple administrations increased mainly because of the expansion policy, but the areas from which foreign traders could come into Egyptian controlled regions also expanded. While effectively cutting out several middlemen in the journey of goods such as lapis lazuli to Egypt, the expansion also meant contact and trade with people who were doing business on different terms than the Egyptians. The Egyptians would have had to either adapt or enforce their own traditions. The traditional use of grain, cloth, and copper as stores of wealth, measures of value, and media of exchange in Egypt was gradually and increasingly complemented by the 'imported' method of using silver. The increase in availability of the more valuable silver and gold also meant the beginning of a shift towards a more convenient medium of exchange which at the same time was more efficient in storing wealth and comparing value, and was starting to have an impact on the Egyptian economy.⁹⁰⁴

The developing use of silver for payment of goods and services, combined with the growing acceptance of writing as a trustworthy method of verifying transactions in the form of contracts and legal settlements meant that the state increasingly needed to ensure and protect personal property rights. At the same time, the state had an incentive to tax individual plots of land where it earlier had contented itself by taxing the large institutions.⁹⁰⁵ The increase in documentation observed for low value transactions between private people was, according to Muhs, markedly less than in the palace and temple spheres. Here, the documentary purpose for the internal redistribution of goods outweighed the aspect of external exchange, especially when high value property was involved and across long distances.⁹⁰⁶ Private transactions were,

⁹⁰⁰ D. J. Brewer & E. Teeter (2007), *Egypt and the Egyptians*, 47-48. Bryan (2000), 220-221. E. Hornung (1992), *History of Ancient Egypt*, 79-80.

⁹⁰¹ Haring (1997), 9-10.

⁹⁰² B. G. Trigger et al. (2001), *Ancient Egypt: A Social History*, 203-204.

⁹⁰³ E. H. Cline & D. O'Connor (2006), *Thutmose III. A New Biography*, v-vi.

⁹⁰⁴ Muhs (2016), 9. Kemp (2006), 315-317. Also confer Bryan (2000), 224.

⁹⁰⁵ Muhs (2016), 98.

⁹⁰⁶ Muhs (2016), 140.

however, increasingly documented in the second millennium BCE,⁹⁰⁷ and especially towards the second half of the Ramesside Period in Deir el-Medina. The practice was most likely inspired by the state and temple employees who were becoming accustomed to the practice in their official capacities.

The need for more documentation in state and temple redistribution arguably had its beginning in the early 18th Dynasty, with the new income of resources from captured foreign lands. The autobiography of Ahmose son of Ebana,⁹⁰⁸ which he had inscribed in his tomb at Elkab, provides a clue regarding the quantities brought back to Egypt during the reigns of the first three kings of the dynasty. Ahmose claims to have been awarded with the Gold of Valour (*nbw n knt*) seven times by the ruling king, four times fighting the Hyksos.⁹⁰⁹ On the various campaigns, he personally captured enemy soldiers and women, presented them to the king and was allowed to keep them as servants, a total of 19.⁹¹⁰ In addition, Ahmose was rewarded with at least 70 auroras (*stzt* = 100 cubits by 100 cubits) of fields, which is equal to about 192,900 m². It is not specified whether these fields were located in Egypt or abroad. Furthermore, while on campaign in Nubia with Thutmose I, Ahmose was promoted to Captain (*hry hnyt*), which presumably would have included an increase in the monthly rations. In the end, Ahmose was able to retire and rest in the tomb he claimed to have built himself (*hṯp=i m hrt irt.n=i ds=i*).⁹¹¹ Although the building of the tomb was overseen by his grandson Pahery,⁹¹² indicating Ahmose's advanced age, the construction project was likely paid for using the income generated by the rewards of the king.⁹¹³

The later Annals of Thutmose III show that the ruler kept track of the captured resources, both people, animals, and goods.⁹¹⁴ These resources were partly distributed as rewards for soldiers like Ahmose son of Ebana, who also received plots of land, and as donations to the temples and royal estates. The administration of this war income and the distribution of rewards and donations expanded the need for documentation on behalf of the king, but once a donation was received, it also needed to be managed. In all official sectors and economic spheres, the need for scribes and administrators grew, and this is particularly visible in Thebes. The campaigns of the early 18th Dynasty rulers and their donations to the temple of Amun created a need for more documentation. The officials overseeing the administration of the donations and daily running of the Amun temple grew in numbers, as did the overall number of titles per official. Especially the number of titles relating to the house of Amun increased. This is evident from the marked increase in Theban tomb building that occurred during the reign of Hatshepsut. Only five Theban

⁹⁰⁷ Muhs (2016), 6.

⁹⁰⁸ Urk. IV, 1-11.

⁹⁰⁹ Binder (2008), 145-148.

⁹¹⁰ 9 men and 10 women, all listed by name after the autobiography in the tomb. Urk. IV, 11.

⁹¹¹ Urk. IV, 10, 9.

⁹¹² W. V. Davies (2009), "The Tomb of Ahmose Son of Ibana at Elkab", 140, fig. 7.

⁹¹³ See chapter 2.7.1 above.

⁹¹⁴ A. Spalinger (1977), "A Critical Analysis of the "Annals" of Thutmose III (Stücke V-VI)", 48-49. In *JARCE* 14, 41-54.

private tombs are securely dated to the time before the reign of Hatshepsut,⁹¹⁵ and another eight tombs are dated to the Early 18th Dynasty, which includes Hatshepsut.⁹¹⁶ There is a certain sense of refocusing upon the Theban area with the reign of Hatshepsut in terms of building activities and the scale on which they are done.

5.1.4 - Production output

The marked increase in building activities in the reign of Hatshepsut was not limited to the Nile Valley. The tradition of constructing royal funerary monuments in the Valley of the Kings also began in this period.⁹¹⁷ The royal tombs increased in volumetric size over the course of the 18th Dynasty and continued to do so for the rest of the New Kingdom. The construction scale baseline is calculated to 197.9 m³ / year for the private Theban tombs in the 18th Dynasty, while for the royal and associated private tombs in the Valley of the Kings, the volumetric output was 48.72 m³ / year (12424.03 m³ / 255 years).⁹¹⁸ The output increases significantly in the 19th Dynasty to 135.97 m³ / year (14956.72 m³ / 110 years)⁹¹⁹ and drops again during the 20th Dynasty to 77.76 m³ / year (9098.19 m³ / 117 years).⁹²⁰ For the entire New Kingdom, the construction scale baseline of the Valley of the Kings is 75.68 m³ / year (36478.92 m³ / 482 years).⁹²¹ While the 18th Dynasty covered the longest of the three periods and had the highest number of tombs built, the tendency to build royal tombs in inaccessible parts of the valley plays a significant role in their relatively low combined volumetric value. The Ramesside tombs are much easier to access and excavate, which partly explains their larger individual size. The overall drop in the production output during the 20th Dynasty is likely connected to the general economic situation that included the loss of control over the foreign lands to the northeast,⁹²² as well as the sudden increase in prices for grain (and other commodities) around the time of Ramesses VII.⁹²³

⁹¹⁵ TT 12, TT 15, and TT C2 from the reign of Amenhotep I, and TT 21 and TT 124 from the reign of Thutmose I.

⁹¹⁶ Cf. chapter 4.1.2 above.

⁹¹⁷ For a discussion of whether the tradition started with Thutmose I or Hatshepsut, see: J. Romer (1974), "Tuthmosis I and the Bibân El-Molûk: Some Problems of Attribution". In *JEA* 60, 119-133; H. Altenmüller (1983), "Bemerkungen zu den Königsgräbern des Neuen Reiches". In *SAK* 10, 25-61; P. D. Manuelian & C. E. Loeben (1993), "New Light on the Recarved Sarcophagus of Hatshepsut and Thutmose I in the Museum of Fine Arts, Boston". In *JEA* 79, 121-155. B. Haring (2014), "Workmen's Marks and the Early History of the Theban Royal Necropolis", 90-92.

⁹¹⁸ The volumetric value also includes the undecorated tombs such as KV 12 and KV21, as well as the tomb of Akhenaten (AT 26) in Amarna.

⁹¹⁹ The numerical value includes the volume of KV 5, built for the sons of Ramesses II, and KV 13 (Bay).

⁹²⁰ Includes the volume of KV 3 (sons of Ramesses III) and KV 19 (Mentuherkhepeshef).

⁹²¹ All of the volumetric values for the tombs in the Valley of the Kings come from the website of the Theban Mapping Project (thebanmappingproject.com).

⁹²² Trigger *et al.* (2001), 226.

⁹²³ Janssen (1975a), 551-552.

The lower volumetric output in the Valley of the Kings throughout the New Kingdom, as compared to the 18th Dynasty Theban private tombs, has to be viewed in the light that the royal funerary monuments consisted of more than just the tomb. The construction of the large mortuary temples required numbers of workers that far surpassed the numbers of Deir el-Medina workers.⁹²⁴ In addition, the 18th Dynasty rulers had other building projects that required as many workmen, for example in Karnak or at the large palace site of Malkata built by Amenhotep III. This ruler also had the large artificial lake or harbour area of Birket Habu excavated, a task that in material volume competes with the Great Pyramid of Khufu.⁹²⁵ The hundreds, if not thousands, of skilled and unskilled workers and labourers that were required to complete these monumental tasks were to a large degree organised and supplied by the officials who could also use them on their own projects.

The accessibility of the construction site in the Valley of the Kings, both in terms of difficult terrain and hostile nomads, would have been a concern for the workmen charged with the construction of the royal tomb. This is exemplified by one case from the 20th Dynasty, where a time limit was also imposed on the building project. Papyrus Turin 1923,⁹²⁶ currently in the Museo Egizio, contains on the verso a record of the scribe in charge of the re-design and enlargement of the tomb of Ramesses VI, KV 9. The tomb was taken over from the previous ruler, Ramesses V. In the papyrus, the scribe included calculations for the volume of rock that needed to be excavated in order to finish the tomb within the timeframe of three years that the project was given.⁹²⁷ The estimated yearly production output thus came to 37618 *dni* (cubic cubits),⁹²⁸ or 5443.4 m³ which is approximately 11975 tons when applying the average density of limestone of 2200 kg per cubic meter. The scribe further subdivided this and arrived at a daily production output of 54 *dni*,⁹²⁹ which in metrics is 7.8 m³ or about 17.2 tons of material to be excavated each work day. The fact that the tomb itself never reached its intended size is partly explained in the lines following the estimate on the papyrus,⁹³⁰ but is not relevant for the purpose of the calculations. Assuming that the scribe at the time of writing indeed intended to finish the construction project on time, the papyrus reflects what was considered possible in terms of excavating in the Valley of the Kings in the 20th Dynasty. On the other

⁹²⁴ O. MMA Field no. 23001.39 from Deir el-Bahri records 228 men donated by various officials to work on the temple of Hatshepsut. Cf. Hayes (1960), pl. X, no. 6.

⁹²⁵ B. Kemp & D. O'Connor (1974) "An Ancient Nile Harbour. University Museum at the Birket Habu", 126.

⁹²⁶ G. Andreu (2002), *Les artistes de Pharaon, Deir el-Médineh et la Vallée des Rois*, 202-204, no. 153; K. Kitchen (1983), *Ramesside Inscriptions VI*, 367-368.

⁹²⁷ For a translation and interpretation of the text, see R. Ventura (1988), "The Largest Project for a Royal Tomb in the Valley of the Kings", *JEA* 74, 137-156.

⁹²⁸ This is the yearly output that would have been required after the volume of the already excavated hallways is subtracted from the 40972 *dni* of line 14. Cf. Ventura (1988), 145.

⁹²⁹ Ventura argues convincingly for reading 54 rather than 52 in line 12 of the papyrus. Ventura (1988), 144-145.

⁹³⁰ The Valley of the Kings seems to have been inaccessible and the workmen also had to work in the Valley of the Queens. Cf. Ventura (1988), 147-150.

hand, if the scribe knew that this was an impossible task, the papyrus may be a demonstration of just how unreasonable the set deadline of three years was.

Compared to the construction scale baselines of the dynasties, individually and combined, the yearly expected output of 5443.4 m³ seems a tall order. Compared to the highest yearly output of the private Theban tombs achieved during the reign of Amenhotep II (456.1 m³ / year), or even increasing the output in Amarna under Akhenaten by reducing the number of years taken into account from 16 (382.6 m³ / year) to 10 years (612.1 m³ / year), this still corresponds to only about a tenth of the budgeted excavation for KV 9. The textual material from the tomb of Senenmut includes recordings of excavations results that are clearly referring to a single day and others that may be monthly, weekly or daily production outputs. Setting aside the entries that recorded a result in *dni* in the Senenmut ostraca for the moment and only focusing on the results that were recorded using measurements in cubits and *nbi* leaves us with the following three documents: In O. 62, 11 stonemasons were recorded having done 1.5435 m³ on the first day of the tomb building project, i.e., 0.1403 m³ per mason. The stonemason Beshau had produced 16.20675 m³ in O. 75, seemingly in one day, but it may also have been during an otherwise unspecified period of time. O. 76 records two results which are arguably for a month: First, the work of Kay, which amounts to 4.05 m³, and then a reference to some other work that resulted in 20.26 m³.

Focusing on O. 62, the daily output of 0.1403 m³ per mason may seem insignificant, but it is roughly equivalent to 375 kg of limestone, dependent on the density of the rock.⁹³¹ It is also reasonably close to the volume of the *dni* measurement of 0.1447 m³. Arguing that the recorded result of O. 62 is not a random number and that the calculation of output per mason is applicable, the daily output of 0.1403 m³ per mason can be used to correlate it with the numbers of P. Turin 1923. However, it is only one of four variables in an equation, the other three variables being the estimated volume, the number of workdays (time), and the number of workmen. The last two variables are not recorded in the papyrus. In his article, Raphael Ventura estimates convincingly that the workmen of Deir el-Medina would have to suspend all other work and cancel most free days in order to complete the proposed redesign of KV 9. Ventura does allow for 17 yearly days off and suggests an annual work period of 348 days in the three year period the project is supposed to run.⁹³² Accepting this number of days as a third variable and using the daily output of 0.1403 m³ per person of O. 62, it is possible to calculate the necessary number of workers needed in the project of P. Turin 1923.

The equation is as follows: volume / (work days x daily output per man) = number of workmen needed. Inserting the known variables results in 112 workmen (5443.4 m³ / (348 days x 0.1403 m³ per man per day)

⁹³¹ Cf. Rasmussen (2003), *Kemiske og Fysiske Tabeller*, 56.

⁹³² Cf. Ventura (1988), 146.

= 111.5 men).⁹³³ The number of workmen in Deir el-Medina had been increased to 120 during the reign of Ramesses IV,⁹³⁴ and assuming that the entire crew could work in the valley with minimal of interruptions, the envisioned redesign of the tomb would have been achievable. Inserting the number of 120 workmen as a variable of the equation and trying to determine the daily output per man instead, the following result emerges: 0.1304 m³ per man per day (= 5443.4 m³ / (348 work days x 120 men)). Allowing for the rounding off of numbers by the scribe of the papyrus as Ventura suggests,⁹³⁵ the daily output of 54 *dni* matches the above calculation if the quantity was meant only for half the crew, i.e. 60 workmen working 348 days a year producing 7.821 m³ (54 *dni*) per day.⁹³⁶

Assuming that the scribe was incorporating the daily output of one *dni* per workman into his calculations but still utilising the full crew of 120 workmen, the number of yearly workdays would have to be lower than the 348 days that Ventura suggested. If the volumetric value of the *dni* (0.1447 m³) is inserted into the equation above, the result is a yearly workload of 313.5 work days and 51½ free days. Returning now to the Senenmut ostraca and, as mentioned in chapter 3.6.4, the amount of 16.20675 m³ that Beshau was recorded having done in O. 75 is the capacity of exactly 112 *dni*.⁹³⁷ This means, that the result could reflect a full working months' worth of excavating by Beshau alone, if he was able to produce four *dni* per day, twice the amount that Teti did in both O. 63 and O. 65, and as the unnamed stonecutter did in O. 291492: 'His work of the day: 2 *dni*' (*b3k.w=f n hrw dni 2*) (see also chapter 3.4.1.2). Alternatively, the recorded volume for Beshau was for two months or his name represented the combined monthly work of two or more stonecutters, Beshau included.

The relation of 1:5 between the two recorded results in O. 76 suggests that when combined, they were the work of six men, including Kay who did 4.05 m³ (28 *dni*) alone. The five unnamed men who did the 'other work' (*ky r-ꜥ*) each did the same amount as Kay with the combined result of 20.26 m³ (140 *dni*). The ostrakon is more likely to list the production output of six men over the course of a month, rather than being the result of a single day. This is similar to the ostraca that describes the construction of TT 95 and in which there are several entries where the combined efforts of different groups of stonecutters of various size have been specifically recorded on a monthly basis: 'Their work of the month: X-(number of) *dni*' (*b3k.w=sn n 3bd dni X*). However, the monthly production rates vary significantly over the course of the

⁹³³ Applying instead the volumetric value of the *dni* gives the result of 108 workmen.

⁹³⁴ Černý (1973a), 103-104. During the reigns of Amenhotep II and Amenhotep III, the number of workmen was about 40. Cf. Haring (2009), "Workmen's Marks on ostraca from the Theban Necropolis: A Progress Report", 152-154.

⁹³⁵ Ventura (1988), 145.

⁹³⁶ If the dating of O. Berlin 12654 to the reign of Ramesses V is correct (see 5.1 above and Janssen (1997), 136), then the total number of workmen in Deir el-Medina was only 60 when P. Turin 1923 was written.

⁹³⁷ Approximately 35 tons of limestone. Compare this to O. Ashmolean HO 51 where the collective work of an unspecified number of stonecutters was recorded as being 80 *dni*.

building project: three stonecutters did 15 *dni* each,⁹³⁸ two stonecutters did 10 *dni* each,⁹³⁹ six stonecutters did 5 *dni* each,⁹⁴⁰ and 4 stonecutters did 7.5 *dni* each.⁹⁴¹ The variability in the monthly production probably depends on the composition of the geology as much as on the actual number of work days where the stonecutters were on the building site. As seen in chapter 4.1.1, the ostraca span 3.75 years whereas the construction scale baseline suggests an overall building time of 4.6 years for TT 95. The tomb itself has a volume of 910.96 m³, or 6295 *dni*. The textual material thus provides suggestions for the three variables of the equation which can be tested against the variable of the tomb volume. Assuming that a constant of six stonecutters were available over the 4.6 years, their production output would be 33.01 m³ (or 228.08 *dni*) per year per person. If, on the other hand, the production output of five *dni* per month per person, as seen in O. 291386, was the agreed-upon goal and the same six stonecutters were on site constantly, the production time would be reduced to only 2.9 years.⁹⁴² As the documentation for the project spans 3.75 years, the conclusion is that the output per stonecutter per month must on average have been higher than five *dni*.

The ostraca from the tomb of Senenmut, TT 71, give the impression that the three named stonecutters, Teti, Hepyhersaef, and Beshau, were the only people working on the excavation of the tomb, although Kay may have been involved as well. It is not clear from the texts whether these men had any helpers who by omission in the records have remained anonymous, but it is highly probable that there were as many unnamed workers as there were named workers (see chapter 3.5). The entries where daily results for an individual have been recorded suggest that the output was between ½ and 2 *dni* when rock was removed, depending on the specific task and part of the tomb. In order to check whether this corresponds to the two suggested timeframes of 3.65 or 4.06 years for the entire construction project of TT 71, the different variables need to first be converted before being entered into the equation. This means counting the years in days, 1330 and 1482 days, respectively, for the two timeframes, and converting the volume of the tomb from cubic meters (803.87 m³) to *dni* measures (5555.31 *dni*), or vice versa. Entered into the equation, the numbers for the shorter timeframe are as follows:

$$5555.31 \text{ dni} / (1330 \text{ days} \times 2 \text{ dni per day per man}) = 2.0885 \text{ men}$$

The result means that it would require slightly more than two men working with a daily output of two *dni* each for 1330 days to completely excavate TT 71. Using the longer timeframe, the result is 1.874 men, i.e.,

⁹³⁸ O. 291492 (year 21, Shemu 4).

⁹³⁹ O. 291239 (year 22, Akhet 1) and O. 291436 (year 25, Akhet 4).

⁹⁴⁰ O. 291386 (year 24 Shemu 4).

⁹⁴¹ O. 291491 (year 25, Shemu 1).

⁹⁴² The equation would contain the following numbers: 6295 *dni* / (5 *dni* per month x 6 men) = 209.833 months (17.49 years) per person (i.e. meaning if only one person had to excavate TT 95 alone). Dividing by the number of months in a year and then the number of men working gives the result of 2.9 years.

slightly less than two men over the 1482 days. However, the ostraca describe more stonecutters and other workers than the two men, which means that the required work days were fewer than either of the two suggested timeframes. Four men doing 2 *dni* each work day gives a construction time of 694 days ($5555.31 \text{ dni} / (4 \text{ men} \times 2 \text{ dni per day per man}) = 694.41 \text{ work days}$). Spread out over the minimum length of time described by the ostraca, 3.65 years, means work was being done on the tomb for about two days per month. As the project very likely spanned a longer period than what is recorded, the number of workdays on the tomb per month would have been even less. Equally, if there were more stonecutters present on an average day and the output was maintained at 2 *dni* the required workdays would be fewer.

The recorded daily results of several *dni* per person in the Senenmut ostraca can probably be explained by the poor quality of stone compared to the limestone found in the Valley of the Kings and KV 9 in particular. Senenmut's workmen were more efficient because the rock was easier to excavate and had less distance to cover in removing of the excavated material. However, the logistics of removing stone were possibly included in the calculations done by the scribe in the redesign of KV 9. The much longer corridors would require a longer time clearing,⁹⁴³ i.e., walking from the deepest part of the tomb where the excavation was taking place and back to the surface.⁹⁴⁴ A tried and tested method to overcome this is to have chains of workers passing the excavated material out. Such an arrangement also takes into account the limited number of workers who could physically be accommodated at the front of excavation at any given time. It does not, however, take into account the working conditions far from the surface with the dust and the low oxygen amount. Workmen would presumably have to rotate in and out quite often.

The importance of the estimated number of workdays and the number of workmen is that they are the basis upon which the calculation for the minimum cost of the tomb building project hinges. As the number of workmen used for the entire duration of any building project in ancient Egypt is largely unknown, a precise calculation is impossible and providing a minimum and a maximum estimate is currently the best option. The information that is currently available only gives daily or monthly glimpses into the larger building projects where the numbers of workmen on site differ and fluctuate from day to day. This fluctuation was in part influenced by, but not limited to, the availability of workmen and frequency of disease among them, and the skills required on site. Table 8 below is meant to give an estimate of the daily output required of each worker to excavate TT 71 in function of the the variables of available manpower and timeframe.

⁹⁴³ Cf. Černý (1973b), 19.

⁹⁴⁴ As P. Turin 1923 includes measurements for the halls already excavated and naming them in turn, including the first pillared hall or 'chariot hall' (*mrkbt*), the redesign happened when the workmen had excavated to a point about 84-88 meters from the entrance of the tomb. Cf. Ventura (1988), 141-142, n. 'm'.

Workmen / Days	365	730	1095	1460	1825	2190	2555	2920
1	2,202	0,551	0,245	0,138	0,088	0,061	0,045	0,034
2	1,101	0,275	0,122	0,069	0,044	0,031	0,022	0,017
3	0,734	<u>0,184</u>	<u>0,082</u>	0,046	0,029	0,020	0,015	0,011
4	0,551	<u>0,138</u>	<u>0,061</u>	0,034	0,022	0,015	0,011	0,009
5	0,440	<u>0,110</u>	<u>0,049</u>	0,028	0,018	0,012	0,009	0,007
6	0,367	0,092	0,041	0,023	0,015	0,010	0,007	0,006
7	0,315	0,079	0,035	0,020	0,013	0,009	0,006	0,005
8	0,275	0,069	0,031	0,017	0,011	0,008	0,006	0,004
9	0,245	0,061	0,027	0,015	0,010	0,007	0,005	0,004
10	0,220	0,055	0,024	0,014	0,009	0,006	0,004	0,003
11	0,200	0,050	0,022	0,013	0,008	0,006	0,004	0,003

Table 8 – The production output measured in m³ per workman per workday required for the excavation of TT 71 (803.87 m³). Based on the textual material and construction scale baseline, this thesis suggests the six outputs in bold and underlined to be the most likely average outputs for the duration of the building project.

As the table lists output per man per work day and does not take into account days away from the building site, the top row with number of days cannot be easily be divided into years. The underlined numbers thus suggest output per workman per day over the course of four to six years. The suggested number of workmen up to 11 is based on the recorded stonecutters in O. 62, but as this number is never repeated in the remaining ostraca, the occurrence seems to be a singular event. The average number of stonecutters mentioned in the ostraca is between three and five, including Kay and Sennefer. The named men working on the tomb(s) of Senenmut were arguably the specialised craftsmen who would be needed for longer periods of time than unskilled labourers who could be quickly instructed what to do, perhaps even on a daily basis (see also chapter 3.5 above). This impression that the Senenmut ostraca give is lacking in the papyri from Saqqara, where Buqentuf does not mention workers, skilled craftsmen or unskilled labourers, by name. He also did not record the number of workmen on site which may have been for similar reasons as the ones facing the Senenmut scribe, i.e., the number probably fluctuated and changed constantly. However, based on the procurement of rations, the workmen under the authority of Buqentuf can be estimated to about 25 on average.

5.1.5 - Commissioning a tomb

Egyptian officials did not start building their own tombs as early in their careers as possible. Based on the Senenmut case study, the production scale baseline, and the timeframe they taken together suggest, there would have been no pressing need to begin early. As the 18th Dynasty Theban private tombs were constructed over a time period of 255 years with an annual average production output of 197.9 m³, and as

most of the tombs are volumetrically smaller than this one, the incentive to start building early was likely not there. Eyre argues similarly for the Old Kingdom tombs that an official did not start building on a small scale early in their career and extended the tomb as he rose in rank and income level.⁹⁴⁵ Rather, it seems that officials in general started building their tombs when they were financially able to do so, i.e., when they could pay for the construction. This is consistent with the claims of the New Kingdom tomb owners that they made their tomb themselves.⁹⁴⁶

Written evidence for when an official started building his tomb is altogether missing from the archaeological record as is a description for a project from beginning to end. Nevertheless, a small inscription from the tomb of Kynebu (TT 113) from the reign of Ramesses VIII gives a timeframe of 3 months and 19 days for the decoration aspect of the tomb's construction.⁹⁴⁷ Unfortunately, there are no details for this tomb in terms of volumetric size, and only an incomplete sketch drawing of the ground plan is available.⁹⁴⁸ On the plan, the tomb appears small compared to the surrounding tombs,⁹⁴⁹ which may give some validity to the claim that it was decorated in only 3.5 months. Studying the decoration of TT 29, Dimitri Laboury and Hugues Tavier concluded that it was done by a single artist, although allowing for the possibility of an assistant or second artist.⁹⁵⁰ Laboury further argues that there is no evidence for more than two painters attested at the same time in a single tomb.⁹⁵¹ Despite of this, there is currently no data on the length of time that it took the artists to do their work and, as Cooney points out, there is no text from Deir el-Medina that links the labour time to a price.⁹⁵²

5.2 - New Kingdom tomb construction

The two tomb building projects of Senenmut and Mai are currently the only examples from ancient Egypt where documentary texts pertaining to the daily construction activities have been published. Despite being separated in both time and space, they are similar regarding a range of aspects which can be compared and complement each other. The main difference is, of course, the lack of physical archaeological remains for the tomb of Mai and as such the project only exists on papyri, whereas TT 71 provides a reference point or background against which the information contained within the ostraca can be checked and compared.

⁹⁴⁵ Eyre (1987a), 23.

⁹⁴⁶ Examples of such tomb owners include Ahmose son of Ebana, as well as Amenemhet (TT 82), Minnakth (TT 87), Senneferi (TT 99), and Djehuty (TT 110) – see chapter 3.6.1.

⁹⁴⁷ A. Amer (1981), "A Unique Theban Tomb Inscription under Ramesses VIII". In *GM* 49, 9-12.

⁹⁴⁸ Kampp (1996), 394-395, plan IV (B4).

⁹⁴⁹ K. M. Cooney (2008), "Profit or Exploitation? The Production of Private Ramesside Tombs within the West Theban Funerary Economy", 97, labels TT 113 as a "*small (m)ḥꜥt tomb*".

⁹⁵⁰ D. Laboury & H. Tavier (2010), "A la recherche des peintres de la nécropole thébaine sous la 18^e dynastie", 103.

⁹⁵¹ Laboury (2012), 202.

⁹⁵² Cooney (2008), 97

Senenmut's tombs TT 71 and TT 353 are rock cut tombs and therefore differ from the tomb of Mai, which presumably was of the New Kingdom temple tomb type found in Saqqara. The majority of examples of this type of tomb so far excavated in Saqqara date to the late 18th Dynasty, a few to the 19th Dynasty, and only one to the 20th Dynasty. The latter tomb belonged to a man named Heqamaatre-neheh and is located in the area north of the pyramid of Teti. Here, many architectural elements, such as limestone lintels and door frames, have been found, including one bearing the name Naherhu, which possibly is the same man as the army scribe mentioned in **MMAV-RA1** of the Saqqara Dossier.⁹⁵³ This may indicate that the tomb of Mai is to be found in the same part of the necropolis, probably covering an area of about 330 m² if the interpretation of the use of the *nwh*-rope is correct (see chapter 2.7.3 above).⁹⁵⁴

The historical setting and circumstances surrounding the two tomb projects are also different. Senenmut lived in a time when Egypt had yet to accomplish its greatest expansion through conquest and as such had not realised the full economic benefit through the tributes they would enforce upon the territories. Mai and Buqentuf lived in a time when most of the northeastern territories had been lost again and Egypt was under pressure on all fronts from enemies better organised than previously seen. While Egypt was still economically capable, many factors were now beginning to affect the economic structures.⁹⁵⁵

5.3 - The basic equation

In this section, a brief overview and description of the variables utilised in the equation is presented. Before doing this, it should be noted that simplifying tomb construction into a basic equation is not an attempt to revive the underlying methodological approach of Processual or New Archaeology.⁹⁵⁶ Equating tomb size to the economic expenditure of the tomb owner and the socioeconomic impact on society cannot be extrapolated to include the historical and cultural developments as well as the underlying human behaviour. It can merely draw attention to and highlight these developments.

The primary variable is that of volume, or **V**, which is the measured volume of a rock-cut tomb. The formula for establishing the value for volume based on the other three variables (see below for each) is as follows:

$$V = HR \times PO \times T$$

⁹⁵³ D. Soliman (2017), "The contextualisation of a tomb construction dossier from Saqqara", 32. In *Saqqara Newsletter* 15, 32-38.

⁹⁵⁴ Interestingly, but probably coincidentally, the two tombs of Senenmut cover a combined floor area of 325 m².

⁹⁵⁵ The most telling example are the events in and around Deir el-Medina, described in the Strike Papyrus (P. Turin Cat. 1880 – Gardiner (1948), *RAD*, 45-58) from year 29 of Ramesses III's reign, 13 years later than the last dated entry in the Saqqara Dossier.

⁹⁵⁶ See for example, B. G. Trigger (1989), *A History of Archaeological Thought*, 301; 315; 327, and I. Hodder & S. Hutson (2003), *Reading the Past*, 4.

HR is the **h**uman **r**esource element in which one unit is the equivalent of a full-time working and healthy individual who has been fully equipped with any and all tools and materials needed for all aspects of the construction. It is therefore made up of several sub-variables which can vary from tomb to tomb. The formula for establishing the value for **HR** is as follows:

$$HR = \frac{V}{PO \times T}$$

PO is the **p**roduction **o**utput, the excavated volume over time. Here, the production scale baseline of 197.9 m³ per year for the 18th Dynasty Theban private tombs can be used as a constant until other baselines have been established. The unit of time that is used in this variable has to correspond to the unit used in the variable **T**, i.e., if one represents a workday the other must also represent a workday. The formula for establishing the value for **PO** is as follows:

$$PO = \frac{V}{HR \times T}$$

T is the timeframe involved, and can be set at different intervals such as years, months or days. One unit assumes full employment of throughout the period in question, i.e. the variable is the period in which all workers (**HR**) are fully employed and at maximum efficiency. The formula for establishing the value for **T** is as follows:

$$T = \frac{V}{HR \times PO}$$

It should be very carefully noted that the equation only allows for a loose estimate of the last three variables. As such, a wide range of possibilities and experimentation is possible and necessary, in order to approach any of the unknown variables with any degree of certainty. In a best case scenario, textual evidence would confirm or support the variables, improving the applicability of the equation.

5.4 - Parameters for the socioeconomic effect of rock-cut tombs

The applicability of the volumetric size of rock-cut tombs in relation to socioeconomic parameters and usability of the above equation can be demonstrated by a couple of examples. The tomb of Amenemhet at Beni Hassan from the 12th Dynasty and the tomb of Ahmose son of Ebana at Elkab will be used in the following discussion because they represent tombs from outside a Theban context. As neither the precise timeframe nor the number of workmen utilised for the building of either tomb is known from the textual material, the purpose here is to estimate these variables for each tomb.

Amenemhet was in office from year 18 to at least year 43 of the reign of Senwosret I.⁹⁵⁷ His tomb, BH 2, is 1040 m³ in volume, measured from the rock overhang of the portico, but not including the sunken courtyard in front of it.⁹⁵⁸ As such, it is comparable in size to the largest tombs in Thebes during the 18th Dynasty. The titles of Amenemhet are also comparable to the titles of the Theban 'super tomb' owners. As nomarch and Overseer of Priests, Amenemhet would have had access to resources on a scale possibly only surpassed by the king and the vizier. The production output required of Amenemhet's workers over the course of the 25 years he was in office amounts to 41.6 m³ per year, or 0.1195 m³ per day if each year contained 348 workdays and 0.1327 m³ if we use the lower number of 313.5 workdays. The latter value is very close to the 0.1304 m³ production output per person calculated for P. Turin 1923 above, and it is also fairly close to the value of one *dni* (0.1447 m³).

That Amenemhet did not commission and start building his tomb from the moment he attained the office of nomarch seems a reasonable assumption on the basis of the above discussion (5.1.4). The estimated timeframe of four to five years for the construction time of TT 71 allows for an assessment of the number of workmen to be made. Assuming a production output of 2 *dni* (0.2894 m³) per man per day and setting the number of annual workdays to 180, i.e. half the year, the suggested number of workmen for a five year period is four workmen (1040 m³ / ((5 years x 180 work days) x 0.2894 m³ per man per day) = 3.99 men). If Amenemhet used 10 years building his tomb instead of five, the number of workmen or the daily production output should be halved. If the number of workdays in a year was different from the 180 utilised above, the other variables would have to be adjusted accordingly.

The tomb of Ahmose son of Ebana at Elkab (n. 5) has been calculated to be 72.5 m³ in size based on the plan drawing published by W. V. Davies, where the maximum ceiling height is estimated to about three meters.⁹⁵⁹ As such, Ahmose can be compared to the Theban tomb owners with tombs ranging from 50 m³ to 100 m³ just above the 'mini tombs' (see chapter 4.3).⁹⁶⁰ As seen above (5.1.3), the construction of Ahmose's tomb was supervised by his grandson Pahery. This indicates that the tomb was not constructed until the end of Ahmose's life, which suggests a low value for the time variable of the equation. Assuming that Ahmose could muster three stonecutters, who could maintain a production output of 2 *dni* per day per

⁹⁵⁷ Grajetzki (2006), 113.

⁹⁵⁸ Newberry (1893), pl. IV.

⁹⁵⁹ Davies (2009), 140 n. 4. Davies here remarks that it "*is now impossible to determine the original height accurately, as the floor is covered with modern paving slabs*".

⁹⁶⁰ An obvious candidate for an in depth comparison would be Nebamun, the owner of TT 145 (volume of 70.2 m³), who was a Captain of Troops (*hry pdt*) (A. Fakhry (1943), "Tomb of Nebamun, Captain of Troops", 374.), a similar title to that of Ahmose, during the reign of Thutmose III. However, as described above (5.1.2), the further from the extreme ends of the volumetric spectrum the tomb and tomb owner is, the less apparent the social stratification, and the tomb owners in the same range as Ahmose and Nebamun differ greatly in terms of titles.

man, he would only need them for 84 workdays ($72.5 \text{ m}^3 / (3 \text{ men} \times 0.2894 \text{ m}^3 \text{ per man per workday}) = 83.5$), equivalent to four or five months, each with 17 to 21 working days.

The two examples from outside the 18th Dynasty Theban necropolis demonstrate the applicability of the construction scale baseline and the equation that can be derived from it. This enables a move away from general assumptions about the ease with which the construction of rock-cut tombs took place and provides an approach to determine the validity of such notions.⁹⁶¹ However, the two examples also illustrate the need for more accurate data and the establishment of local construction scale baselines within the periods that are studied. For example, the establishment of a baseline for the Beni Hasan tombs in Middle Kingdom would give a better assessment of the production time and number of workmen utilised in the building of BH 2. A baseline that encompasses Egypt in its entirety for the Middle Kingdom would also provide a better background on which to base the equation variables. Naturally, the first step would be to measure the volumetric values of the tombs in the necropolis one wishes to study. The approach could with relative ease be applied to the tombs of Sedment, which have recently been collectively published by H. Franzmeier and many of which have already been measured volumetrically.⁹⁶² Establishing of production scale baselines for rock-cut tombs on local, regional, and national levels for the various historical periods of Egyptian history will enable scholars to compare and analyse the economic and historical development of ancient Egypt in relation to cohesive and quantifiable archaeological data.

⁹⁶¹ For the general assumption that it was relatively easy and/or fast to construct the Theban private tombs, see for example: MacKay (1921), 154; L. Manniche (1987), *The Tombs of the Nobles at Luxor*, 11. For the same statement on the production of royal tombs, see K. Weeks (2011), "Introduction to the Valley of the Kings", 119.

⁹⁶² H. Franzmeier (2017), *Die Gräberfelder von Sedment im Neuen Reich, Band I-II*.

6. Conclusions

In this thesis, I have investigated the relationship between the volumetric size of 18th Dynasty Theban private tombs and the socioeconomic reality of tomb construction in order to draw attention to the significance of size in relation to the economic importance of rock-cut tombs. This was achieved by first calculating and then analysing the dimensions of the tombs in a diachronic perspective, which led to a calculation of the average construction output. The average construction output, or construction scale baseline, was calculated to 197.9 m³ of excavated rock per year during the 255 years of the 18th Dynasty. The construction scale baseline can be used to give an estimate of the timeframe involved in constructing other rock-cut tombs in Egypt.

As part of the thesis, I have developed a method for utilizing the private rock-cut tombs of the 18th Dynasty Theban necropolis as a primary data source for economic studies of ancient Egypt. This was done to provide quantifiable and factual data for an area of Egyptology and economic history where such numerical data is scarce. To this end, I have established four variables that, combined in a basic equation, can help estimate the economic expenditure for a single tomb or group of tombs. The four variables are the production output, timeframe, human recourses, and volume. The equation also allows an estimation to be made for any variables that cannot be determined archaeologically or through textual sources. This is especially useful for rock-cut tombs where no textual material documents the construction process.

Furthermore, I have reinterpreted the construction terminology and measurements found in the ancient Egyptian documents that refer to tomb building projects. This was done in order to determine the rate of progress in any tomb building project that was recorded, as this relates to the overall timeframe, the resources used, and the economic expenditure. I did this by analysing the archaeological data alongside the textual material. This entailed identifying the construction and measurement terminology in the tomb of Senenmut (TT 71) and identifying known archaeological features in the documents. On the basis of the reinterpreted construction and measurement terminology, the internal chronology of the work documents from TT 71 was reorganised. This reorganisation also enabled a new assessment of when work was at its most intense during the four to five years of the construction process.

The data from the 18th Dynasty Theban private tombs was compared to two other datasets, the Amarna private tombs and the royal tombs from the Valley of the Kings. The comparison with the calculated volumetric values of the Amarna tombs revealed a similar level of production output at Amarna during the reign of Akhenaten as in the preceding reigns of Amenhotep III and Thutmose IV at Thebes. This indicates similar strategies in construction methods and organisation. In contrast, the production output in the Valley

of the Kings was found to be much lower than that of the private tombs of the Theban necropolis and at Amarna, even when the royal tombs of the 19th and 20th Dynasties were included. In light of the construction scale baseline compared to the size of the individual tombs, I argue that there was no incentive for the ancient Egyptian rulers or the officials to start building a tomb early in their career.

A further angle the thesis employed to address the social status of the tomb owners, was the investigation of the titles of certain Theban private tomb owners. The titles reveal the tomb owners' affiliations with various economic institutions, and as such provide an economic and administrative context for the volumetric size of the tombs. The analysis of the titles revealed a pattern of distinct levels within the ancient Egyptian administration, where higher level officials were the owners of larger tombs and lower level ones the owners of smaller tombs. However, this pattern is less distinct for the titles belonging to tomb owners with tombs of more medium size. This observation also holds true when including the tombs and titles of the Amarna tomb owners.

I have argued, in line with previous scholars, that the economic structure of ancient Egypt, including the tombs, can best be explained using the household model. Here, a household functions internally on the principle of redistribution, while externally it took part in the interplay, or market, that existed among the private and official households. It is precisely due to this mixed economic system that the private and institutional households of the New Kingdom should be viewed as a collection of social connections which were based on individual relationships. These relationships are in the case of the tomb owners expressed by their titles which reveal the affiliations that the tomb owner had with official institutions. It is based on these institutional affiliations that it is possible to assess the economic influence of the individual tomb owner. While the tomb owners often acknowledged their subordination and gratitude to the ruling king, they also make it explicit in their tomb inscriptions that they themselves were responsible for the building of their tombs. This means, that they were able to pay for the construction and organise it through their personal and professional connections.

The socioeconomic aspects of ancient Egyptian tomb construction have previously only been touched upon peripherally in connection with studies of individual tombs. As such, this dissertation is the first comprehensive study on the topic on a broader scale. Through a comparison with the archaeological data, I have made new interpretations of the textual material and developed a new approach for the further study of the seemingly inexhaustible well of information that is the ancient Egyptian tomb.

Bibliography

- Andreau, Jean (2002), "Twenty Years After Moses I. Finley's *The Ancient Economy*". In Scheidel, Walter & von Reden, Sitta (Eds.) *The Ancient Economy* (Edinburgh; Edinburgh University Press), 33-49.
- Andreu, Guillemette (2002), *Les artistes de Pharaon, Deir el-Médineh et la Vallée des Rois* (Paris: Réunion des Musées nationaux).
- Al-Ayedi, Abdul Rahman (2006), *Index of Egyptian Administrative, Religious and Military Titles of the New Kingdom* (Ismailia: Obelisk Publications).
- Allam, Schafik (1989), "Some Remarks on the Trial of Mose". In *Journal of Egyptian Archaeology* 75 (London: Egypt Exploration Society), 103-112.
- Allam, Schafik (1968), "Sind Die Nichtliterarischen Schriftostraka Brouillons". In *Journal of Egyptian Archaeology* 54 (London: Egypt Exploration Society), 121-128.
- Allen, James P. (2015), *Middle Egyptian Literature. Eight Literary Works of the Middle Kingdom* (Cambridge: Cambridge University Press).
- Allen, James P. (2002), *The Heqanakht Papyri*, The Metropolitan Museum of Art Egyptian Expedition Volume XXVII (New York: The Metropolitan Museum of Art).
- Altenmüller, Hartwig (1983), "Bemerkungen zu den Königsgräbern des Neuen Reiches". In *Studien zur Altägyptischen Kultur* 10 (Hamburg: Helmut Buske Verlag GmbH), 25-61.
- Arnold, Dieter (1991), *Building in Egypt. Pharaonic Stone Masonry* (Oxford: Oxford University Press).
- Arnold, Dieter (1979), *The Temple of Mentuhotep at Deir el-Bahri*, Metropolitan Museum of Art Egyptian Expedition Vol. XXI (Mainz am Rhein: Philipp von Zabern).
- Auenmüller, Johannes Stefan G. (2014), "The Location of New Kingdom Elite Tombs". In *Studies in Ancient Art and Civilization* 18 (Krakow: Jagiellonian University Institute of Archaeology), 171-193.
- Bács, Tamás A. (2015), "Some Aspects of Tomb Reuse During the Twentieth Dynasty". In Jasnow, Richard and Kathlyn M. Cooney (Eds.), *Joyful in Thebes: Egyptological studies in honor of Betsy M. Bryan* (Atlanta: Lockwood Press), 1-9.
- Badawy, Alexander (1957), "Philological Evidence about Methods of Construction in Ancient Egypt". In *Annales du Service des Antiquités de l'Égypte* 54 (Cairo: Institut Français d'Archéologie Orientale), 51-74.
- Baer, Klaus (1960), *Rank and Title in the Old Kingdom. The Structure of the Egyptian Administration in the Fifth and Sixth Dynasties* (Chicago: The University of Chicago Press).

- Baines, John (2015), "On the Old Kingdom Inscriptions of Hezy. Purity of Person and Mind; Court Hierachy". In Amstutz, Hans, Dorn, Andreas, Müller, Matthias, Ronsdorf, Miriam, and Uljas, Sami (Eds.) *Fuzzy Boundaries. Festschrift für Antonio Loprieno* (Hamburg: Widmaier Verlag), 519-536.
- Bakir, 'Abd el-Mohsen (1970), *Egyptian epistolography from the eighteenth to the twenty-first dynasty*, Bibliothèque d'études 48 (Cairo: Institut Français d'Archéologie Orientale).
- Bard, Kathryn A. (2000), "The Emergence of the Egyptian State". In Shaw, Ian (Ed.), *The Oxford History of Ancient Egypt* (Oxford: Oxford University Press), 61-88.
- Bergmann, Ernst Ritter von (1886), *Hieratische und Hieratisch-Demotische Texte der Sammlung ägyptischer Alterthümer des allerhöchsten Kaiserhauses* (Vienna: Verlag von Adolf Holzhauser).
- Bietak, Manfred (2017), "Harbours and Coastal Military Bases in Egypt in the Second Millennium B.C.". In Willems, Harco & Dahms, Jan-Michael (Eds.) *The Nile: Natural and Cultural Landscape in Egypt*, Mainz Historical Cultural Sciences, Volume 36 (Bielefeld: transcript Verlag), 53-70.
- Bietak, Manfred (2009), "Perunefer: an update". In *Egyptian Archaeology* 35, 16-17.
- Binder, Susanne (2008), *The Gold of Honour in New Kingdom Egypt*, The Australian Centre for Egyptology: Studies 8 (Oxford: Aris and Phillips Ltd.).
- Bleiberg, Edward (1995), "The Economy of Ancient Egypt". In J. Sasson (Ed.), *Civilizations of the Ancient Near East* (Vol. III, New York, Charles Scribner's Sons), 1373-1385.
- Bourriau, Janine D., Nicholson, Paul T. and Rose, Pamela J. (2000) "Pottery". In Nicholson, Paul T. and Shaw, Ian (Eds.) *Ancient Egyptian materials and technology* (Cambridge: Cambridge University Press), 121-147.
- Brack, Annelies & Brack, Arthur (1980), *Das Grab des Haremheb, Theben Nr. 78*, Archäologische Veröffentlichungen 35 (Mainz am Rhein: Philipp von Zabern).
- Brewer, Douglas J. & Teeter, Emily (2007), *Egypt and the Egyptians*, Second Edition (Cambridge: Cambridge University Press).
- Briet, Suzanne (1951), *Qu'est-ce que la documentation?* (Paris: Édition Documentaires Industrielles et Techniques).
- Brugsch, Heinrich (1884), "Der Apis-Kreis aus den Zeiten der Ptolemäer: nach den hieroglyphischen und demotischen Weihinschriften des Serapeums von Memphis". In *Zeitschrift für Ägyptische Sprache und Altertumskunde* 22 (Leipzig: J. C. Hinrichs'sche Buchhandlung), 110-136.
- Bruyère, Bernard (1926), *Rapport sur les fouilles de Deir el Médineh (1924-1925)*, Fouilles de l'Institut Français d'Archéologie Orientale 3 (Cairo: Institut français d'archéologie orientale).

- Bryan, Betsy (2010), "Pharaonic Painting through the New Kingdom". In Alan B. Lloyd (ed.), *A Companion to Ancient Egypt* (Oxford: Blackwell Publishing Ltd), 990-1007.
- Bryan, Betsy (2006), "Administration in the Reign of Thutmose". In Cline, Eric H. and David O'Connor (Eds.), *Thutmose III - A New Biography* (Ann Arbor: The University of Michigan Press), 69-122.
- Bryan, Betsy (2000), "The 18th Dynasty before the Amarna Period". In Shaw, Ian (Ed.) (2000), *The Oxford History of Ancient Egypt* (Oxford: Oxford University Press), 218-271.
- Bryan, Betsy (1991), *The Reign of Thutmose IV* (Baltimore: The John Hopkins University Press).
- Buckland, Michael K. (1997), "What is a Document". In *Journal of the American Society for Information Science*, vol. 48, issue 9 (Hoboken: John Wiley & Sons, Inc.), 804-809.
- Bunbury, Judith & Jeffreys, David (2011), "Real and Literary Landscapes in Ancient Egypt". In *Cambridge Archaeological Journal* 21(1) (Cambridge: The McDonald Institute for Archaeological Research), 65-76.
- Burkard, Günter (2006), "Das *ḥtm n pꜣ ḥr* von Deir el-Medine. Seine Funktion und die Frage seiner Lokalisierung". In Dorn, Andreas & Hofmann, Tobias (Eds.) *Living and writing in Deir el-Medine, socio-historical embodiment of Deir el-Medine texts*, Aegyptiaca Helvetica 19 (Basel: Schwabe Verlag), 31-42.
- Callender, Gae (2000), "The Middle Kingdom (c. 2055-1650 BC)". In Shaw, Ian (Ed.), *The Oxford History of Ancient Egypt* (Oxford: Oxford University Press), 148-183.
- Carnarvon, Earl of and Carter, Howard (1912), *Five Years' Explorations at Thebes* (London: Oxford University Press).
- Carter, Howard & Gardiner, Alan H. (1917), "The Tomb of Ramesses IV and the Turin Plan of a Royal Tomb". In *Journal of Egyptian Archaeology* 4 (London: Egypt Exploration Society), 130-158.
- Cartledge, Paul (2002), "The Economy (Economies) of Ancient Greece" in W. Scheidel and S. von Reden (Eds.) *The Ancient Economy* (Edinburgh; Edinburgh University Press), 11-32.
- Castle, Edward W. (1992), "Shipping and Trade in Ramesside Egypt". In *Journal of the Economic and Social History of the Orient*, Vol. 35, No. 3 (Leiden: Brill), 239-277.
- Černý, Jaroslav (1973a), *A Community of Workmen at Thebes in the Ramesside Period*, Bibliothèque d'études 50 (Cairo: Institut Français d'Archéologie Orientale).
- Černý, Jaroslav (1973b), *The Valley of the Kings*, IFAO - Bibliothèque d'études 61 (Cairo: Institut Français d'Archéologie Orientale).
- Černý, Jaroslav (1958), *Egyptian stelae in the Bankes Collection* (Oxford: Griffith Institute).

- Černý, Jaroslav (1954), "Prices and Wages in Egypt in the Ramesside Period". In *Journal of World History* vol. 1, No. 3 (Paris: Librairie des Méridiens), 903-921.
- Černý, Jaroslav & Gardiner, Alan H. (1957), *Hieratic Ostraca, volume I* (Oxford: Griffith Institute; Oxford University Press).
- Chauvet, Violaine (2007), "Royal Involvement in the Construction of Private Tombs". In Goyon, Jean-Claude & Cardin, Christine (Eds.) *Proceedings of the Ninth International Congress of Egyptologists*, Orientalia Lovaniensia Analecta 150 (Leuven: Peeters Publishers and Department of Oriental Studies), 313-321.
- Cherpion, Nadine (1999), *Deux tombes de la XVIIIe dynastie à Deir el-Medina, Nos 340 (Amenemhat) et 345 (anonyme)*, Mémoires publiés par les membres de l'Institut français d'archéologie orientale 114 (Cairo: Institut français d'archéologie orientale).
- Cline, Eric H. & O'Connor, David (2006), *Thutmose III - A New Biography* (Ann Arbor: The University of Michigan Press).
- Coase, Ronald (1937), "The Nature of the Firm". In *Economica* 4, no. 16, 386-405.
- Collier Mark & Quirke, Stephen (2004), *The UCL Lahun Papyri: Religious, Literary, Legal, Mathematical and Medical*, BAR International Series 1209 (Oxford: Archaeopress).
- Condon (1984), "Two Account Papyri of the Late Eighteenth Dynasty (Brooklyn 35.1453 A and B)". In *Revue d'égyptologie* 35 (Leuven: La Société Française d'Égyptologie, Peeters), 57-82.
- Cooney, Kathlyn M. (2008), "Profit or Exploitation? The Production of Private Ramesside Tombs within the West Theban Funerary Economy". In *Journal of Egyptian History*, vol. 1,1 (Leiden: Brill), 79-115.
- Cooney, Kathlyn M. (2002), *The Value of Private Funerary Art in Ramesside Period Egypt* (Ann Arbor: ProQuest Information and Learning Company).
- Coulon, Laurent (1997), "Véracité et rhétorique dans les autobiographies égyptiennes de la Première Période Intermédiaire". In *Bulletin de l'Institut Français d'Archéologie Orientale* 97 (Cairo: Institut français d'archéologie orientale), 109-138.
- Daressy, Georges (1893), *Recueil de cônes de funéraires*, Mémoires publiés par les membres de la Mission archéologique française au Caire 8.2 (Paris: Mission archéologique française au Caire).
- Davies, Benedict G. (1999), *Who's who at Deir el-Medina: a prosopographic study of the royal workmen's community*. Egyptologische Uitgaven 13 (Leiden: Nederlands Instituut voor het Nabije Oosten).
- Davies, Nina de Garis & Davies, Norman de Garis (1933), *The tombs of Menkheperresonb, Amenmose and another, (nos. 86, 112, 42, 226)*, Theban tomb Series 5 (London: Egypt Exploration Fund).

Davies, Nina de Garis & Gardiner, Alan H. (1915), *The Tomb of Amenemhet (no. 82)*, Theban Tomb Series 1 (London: Egypt Exploration Fund).

Davies, Norman de Garis (1943), *The Tomb of Rekh-Mi-Re at Thebes*, Metropolitan Museum of Art Egyptian Expedition Vol. XI (New York: Metropolitan Museum of Art),

Davies, Norman de Garis (1941), *The tomb of the vizier Ramose*, Mond excavations at Thebes I (London: Egypt Exploration Society).

Davies, Norman de Garis (1932), "Tehuti, owner of tomb 110 at Thebes". In Glanville, S. R. K. (Ed.) *Studies presented to F. Ll. Griffith* (London: Egypt Exploration Society; Humphrey Milford, Oxford University Press), 279-290.

Davies, Norman de Garis (1930), *The Tomb of Ken-Amun at Thebes*, Metropolitan Museum of Art Egyptian Expedition Vol. V (New York: Metropolitan Museum of Art).

Davies (1927), *Two Ramesside Tombs at Thebes*, Robb de Peyster Tytus Memorial Series Volume V (New York: Metropolitan Museum of Art).

Davies, Norman de Garis (1925), "The Tomb of Tetaky at Thebes (No. 15)". In *Journal of Egyptian Archaeology* 11 (London: Egypt Exploration Society), 10-18.

Davies, Norman de Garis (1923), *The Tombs of Two Officials of Thutmosis the Fourth (nos. 75 and 90)*, The Theban Tomb Series Third Memoir, (London: The Egypt Exploration Society, William Clowes and Sons).

Davies, Norman de Garis (1922), *The tomb of Puyemre at Thebes, I*, Metropolitan Museum of Art Egyptian Expedition Vol. II (New York: Metropolitan Museum of Art).

Davies, Norman de Garis (1917), *The tomb of Nakht at Thebes* (New York: Metropolitan Museum of Art).

Davies, Norman de Garis (1913), *Five Theban tombs*, Archaeological Survey of Egypt 21 (London: Egypt Exploration Fund).

Davies, Norman de Garis (1908), *The Rock Tombs of El Amarna. Part VI – Tombs of Paranefer, Tutu, And Ay*, Archaeological Survey of Egypt, Eighteenth Memoir (London: William Clowes and Sons).

Davies, Norman de Garis (1908), *The Rock Tombs of El Amarna. Part V. Smaller Tombs and Boundary Stelae*, Archaeological Survey of Egypt, Seventeenth Memoir (London: William Clowes and Sons).

Davies, Norman de Garis (1906), *The Rock Tombs of El Amarna. Part IV. The Tombs of Penthu, Mahu, and Others*, Archaeological Survey of Egypt, Sixteenth Memoir (London: Gilbert and Rivington).

Davies, Norman de Garis (1905), *The Rock Tombs of El Amarna. Part III. The Tombs of Huya and Ahmes*, Archaeological Survey of Egypt, Fifteenth Memoir (London: Gilbert and Rivington).

Davies, Norman de Garis (1905), *The Rock Tombs of El Amarna. Part II. The Tombs of Panehsy and Meryra II*, Archaeological Survey of Egypt, Fourteenth Memoir (London: Gilbert and Rivington).

Davies, Norman de Garis (1903), *The Rock Tombs of El Amarna. Part I. The Tomb of Meryra*, Archaeological Survey of Egypt, Thirteenth Memoir (London: Gilbert and Rivington).

Davies, W. Vivian (2009), "The Tomb of Ahmose Son of Ibana at Elkab". In Claes, Wouter, Herman De Meulenaere & Stan Hendrickx (Eds.) *Elkab and Beyond. Studies in Honour of Luc Limme*, Orientalia Lovaniensia Analecta 191 (Leuven: Peeters Publishers and Department of Oriental Studies), 139-175.

Demarée, Robert J. (2008), "Reports on Tomb-Construction at Saqqara in the New Kingdom". In *Saqqara Newsletter Vol. 6* (Leiden: Friends of Saqqara Foundation), 7-10.

Demarée, Robert J. & Janssen, Jac. J. (1982), *Gleanings from Deir el-Medina*, Egyptologische Uitgaven 1 (Leiden: Nederlands Instituut voor het Nabije Oosten).

Demichelis, Sara (2004), "Le projet initial de la tombe de Ramses IV ?". In *Zeitschrift der Ägyptischen Sprache und Altertumskunde* 131 (Berlin: Akademie Verlag), 114-133.

Dobbin, Frank (2005), "Comparative and Historical Approaches to Economic Sociology". In Smelser, Neil J. & Swedberg, Richard (Eds.) *The Handbook of Economic Sociology*, Second Edition (Princeton: Princeton University Press), 26-48.

Donker van Heel, K. & Haring, B. (2003), *Writing in a Workmen's Village. Scribal Practice in Ramesside Deir el-Medina* (Leiden: Nederlands Instituut voor het Nabije Oosten).

Dorman, Peter (1995), "Two Tombs and One Owner". In Assmann, Jan *et al.* (Eds.) *Thebanische Beamtennekropolen. Neue Perspektiven archäologischer Forschung Internationales Symposium Heidelberg 9. – 13. 6. 1993. Studien zur Archäologie und Geschichte Ägyptens* 12 (Heidelberg: Heidelberger Orientverlag), 141-154.

Dorman, Peter (1991), *The tombs of Senenmut. The architecture and decoration of tombs 71 and 353*. The Metropolitan Museum of Art Egyptian Expedition Vol. 24 (New York: The Metropolitan Museum of Art).

Dorman, Peter (1988), *The Monuments of Senenmut* (London: Kegan Paul International Ltd.).

Dorn, Andreas (2011), *Arbeiterhütten im Tal der Könige. Ein Beitrag zur altägyptischen Sozialgeschichte aufgrund von neuem Quellenmaterial aus der Mitte der 20. Dynastie (ca. 1150 v. Chr.)*. Aegyptiaca Helvetica 23 (Basel: Schwabe Verlag).

Dunham, Dows (1937), *Naga-ed-Dêr stelae of the First Intermediate Period* (London: Oxford University Press).

Dupuis, C., Aubry, M.-P., King, C., Knox, R. W. O. B., Berggren, W. A., Youssef, M., Galal, W. F., and Roche, M. (2011), "Genesis and geometry of tilted blocks in the Theban Hills, near Luxor (Upper Egypt)". In *Journal of African Earth Sciences* 61 (New York: Elsevier), 245-267.

Dziobek, Eberhard (1998), *Denkmäler des Vezirs User-Amun*. Studien zur Archäologie und Geschichte Altägyptens 18 (Heidelberg: Heidelberger Orientverlag).

Dziobek, Eberhard (1992), *Das Grab des Ineni, Theben Nr. 81*, Archäologische Veröffentlichungen 68 (Mainz am Rhein: Philipp von Zabern).

Eigner, Diethelm (1983), "Das thebanische Grab des Amenhotep, Wesir von Unterägypten: die Architektur". In *Mitteilungen des Archäologischen Instituts Abteilung Kairo, band 39* (Mainz am Rhein: Philipp von Zabern), 39-50.

Engelmann-von Carnap, Barbara (2003), "Zwei Gräberensembles in Khokha-Sud: Zur Konzeption der Bilder in Seitenanlagen am Grabhof der 18. Dynastie". In Meyer, Sibylle (Ed.) *Egypt - Temple of the Whole World. Studies in Honour of Jan Assmann* (Leiden: Brill), 21-40.

Erman, Adolf and Grapow, Hermann (1971), *Wörterbuch der Aegyptischen Sprache* (Berlin: Akademie-Verlag GmbH).

Eyre, Christopher (2013), *The Use of Documents in Pharaonic Egypt* (Oxford: Oxford University Press).

Eyre, Christopher (2010), "The economy: Pharaonic". In Alan Lloyd (Ed.), *A companion to Ancient Egypt* (Oxford, Blackwell Publishing Ltd.), 291-308.

Eyre (2008), "Economy and Society in Pharaonic Egypt", 724. In Kousoulis, Panagiotis & Lazaridis, Nikolaos (Eds.) *Proceedings of the Tenth International Congress of Egyptologists, University of the Aegean, Rhodes 22-29 May 2008*, Orientalia Lovaniensia Analecta 241 (Leuven: Peeters Publishers and Department of Oriental Studies), 707-725.

Eyre, Christopher (1998), "The Market Women of Pharaonic Egypt". In N. Grimal & B. Menu (Eds.) *Le commerce en Égypte ancienne*, Bibliothèque d'études 121 (Cairo: Institut Français d'Archéologie Orientale), 173-191.

Eyre, Christopher (1994), "Feudal Tenure and Absentee Landlords". In Allam, Schafik (Ed.) *Grund und Boden in Altägypten. Rechtliche und Sozio-Ökonomische Verhältnisse* (Tübingen), 107-134.

Eyre, Christopher (1987a), "Work and the Organisation of Work in the Old Kingdom". In Powell, Marvin A. (Ed.) *Labor in the ancient Near East*. American Oriental Series 68 (New Haven, CN: American Oriental Society), 5-47.

Eyre, Christopher (1987b), "Work and the Organisation of Work in the New Kingdom". In Powell, Marvin A. (Ed.) *Labor in the ancient Near East*. American Oriental Series 68 (New Haven, CN: American Oriental Society), 167-221.

- Fakhry, Ahmed (1947), "A Report on the Inspectorate of Upper Egypt". In *Annales du Service des Antiquités de l'Égypte* 46 (Cairo: Institut Français d'Archéologie Orientale), 25-54.
- Fakhry, Ahmed (1943), "Tomb of Nebamun, Captain of Troops". In *Annales du Service des Antiquités de l'Égypte* 43 (Cairo: Institut Français d'Archéologie Orientale), 369-379.
- Faulkner, Raymond (1962), *A Concise Dictionary of Middle Egyptian* (Oxford: Griffith Institute).
- Feucht, Erika (1985), "The *ḥrdw n kꜣp* reconsidered". In Israelit-Groll, Sarah (Ed.), *Pharaonic Egypt, the Bible and Christianity* (Jerusalem: Magnes Press), 38-47.
- Finley, Moses I. (1999), *The Ancient Economy*. Updated Edition. With a Foreword by Ian Morris (Berkeley: University of California Press).
- Forstner-Müller, Irene (2014), "Avaris, its harbours and the Perunefer problem". In *Egyptian Archaeology* 45, 32-35.
- Franke, Detlef (1984a), *Personendaten aus dem Mittleren Reich (20. – 16. Jahrhundert v. Chr.)*, Ägyptologischen Abhandlungen 41 (Wiesbaden: Otto Harrassowitz).
- Franke, Detlef (1984b), "Probleme der Arbeit mit altägyptischen Titeln des Mittleren Reiches", *Göttinger Miszellen* 83 (Göttingen: Seminar für Ägyptologie und Koptologie der Universität Göttingen), 103-124.
- Franzmeier, Henning (2017), *Die Gräberfelder von Sedment im Neuen Reich. Meterielle und Kulturelle Variation im Bestattungswesen des Ägyptischen Neuen Reiches, Band I-II*, Probleme der Ägyptologie 34 (Leiden: Brill).
- Foucart, Georges (1928), *Le tombeau de Roÿ*, Mémoires publiés par les membres de l'Institut français d'archéologie orientale du Caire 57.1 (Cairo : Institut français d'archéologie orientale).
- Gaballa, Gaballa Ali (1977), *Memphite tomb-chapel of Mose* (Warminster, England: Aris and Phillips Ltd.)
- Galán, José M. (2014), "The Inscribed Burial Chamber of Djehuty (TT 11)". In Galán, José M., Bryan, Betsy M. and Dorman, Peter F. (Eds.) *Creativity and Innovation in the Reign of Hatshepsut*, Studies in Ancient Oriental Civilisation 69 (Chicago: Oriental Institute of the University of Chicago), 247-272.
- Galán, José M. (2014), "The rock-cut tomb-chapels of Hery and Djehuty on the West Bank of Luxor; History, environment and conservation". In Saiz-Jimenez, C. (Ed.) *The Conservation of Subterranean Cultural Heritage* (London: Taylor & Francis Group), 3-16.
- Galloway, J. H. (1989), *The sugar cane industry: An historical geography from its origins to 1914* (Cambridge: Cambridge University Press).

- García, Juan Carlos Moreno (2013), "The study of ancient Egyptian administration". In García, Juan Carlos Moreno (Ed.) *Ancient Egyptian Administration* (Leiden: Brill), 1-17.
- Gardiner, Alan H. (1957), *Egyptian Grammar*, Third Edition, Revised (Oxford: Griffith Institute).
- Gardiner, Alan H. (1948), *Ramesside Administrative Documents* (London: Oxford University Press).
- Gardiner, Alan H. (1937), Late-Egyptian Miscellanies. *Bibliotheca Aegyptiaca* 7 (Bruxelles: La Fondation Égyptologique Reine Élisabeth).
- Gardiner, Alan H. (1905), *Inscription of Mes, a contribution to the study of Egyptian Juridical Procedure* (Leipzig: J. C. Hinrichs'sche Buchhandlung).
- Gardiner, Alan H. & Carter, Howard (1917), "The Tomb of Ramesses IV and the Turin Plan of a Royal Tomb". In *Journal of Egyptian Archaeology* 4 (London: Egypt Exploration Society), 130-158.
- Gardiner, Alan H., Thompson, Herbert. & Milne, Joseph G. (1913), *Theban Ostraca* (London: Oxford University Press).
- Glanville, Stephen Ranulph Kingdon (1932), "Records of a Royal Dockyard of the Time of Tuthmosis III papyrus British Museum 10056 (Part II)". In *Zeitschrift für Ägyptische Sprache und Altertumskunde* 68 (Leipzig: J. C. Hinrichs'sche Buchhandlung), 7-41.
- Glanville, Stephen Ranulph Kingdon (1931), "Records of a Royal Dockyard of the Time of Tuthmosis III: papyrus British Museum 10056 (Part I)". In *Zeitschrift für Ägyptische Sprache und Altertumskunde* 66 (Leipzig: J. C. Hinrichs'sche Buchhandlung), 105-121.
- Gnirs, Andrea M. (2013), "Coping with the Army: The Military and the State in the New Kingdom". In García, Juan Carlos Moreno (Ed.) *Ancient Egyptian Administration* (Leiden: Brill), 639-717.
- Graeber, David (2011), *Debt : the first 5,000 years* (Brooklyn: First Melville House Printing).
- Grajetzki, Wolfram (2006), *The Middle Kingdom of Ancient Egypt. History, Archaeology and Society* (London: Gerald Duckworth & Co. Ltd.).
- Granovetter, Mark (1985), "Economic Action and Social Structure: The Problem of Embeddedness". In *American Journal of Sociology* 91, No. 3 (Chicago : The University of Chicago Press), 481-510.
- Griffith, Francis Llewellyn (1927), "The Abydos Decree of Seti I at Nauri". In *Journal of Egyptian Archaeology* 13 (London: Egypt Exploration Society), 193-208.
- Griffith, Francis Llewellyn (1898), *The Petrie Papyri. Hieratic Papyri from Kahun and Gurob (principally of the Middle Kingdom)* (London: Bernard Quaritch).

Guksch, Heike (1995), *Die Gräber des Nacht-Min und des Men-cheper-Ra-seneb, Theben Nr. 87 und 79*, Archäologische Veröffentlichungen 34 (Mainz am Rhein: Philipp von Zabern).

Gundlach, Rolf *et al.* (1988), *Sennefer. Die Grabkammer des Bürgermeisters von Theben* (Mainz am Rhein: Philipp von Zabern).

Gunn, Battiscombe (1933), "The graffiti and ostraka". In Frankfort, Henri A., *The cenotaph of Seti I at Abydos* (London: Egypt Exploration Society), 87-96.

Gunn, Battiscombe (1929), "Additions to the Collections of the Egyptian Museum during 1928". In *Annales du Service des Antiquités de l'Égypte* 29 (Cairo: Institut français d'archéologie orientale), 89-96.

Habachi, Labib & Anus, Pierre (1977), *Le tombeau de Naÿ à Gournet Mar-ei, (no. 271)*, Mémoires publiés par les membres de l'Institut français d'archéologie orientale du Caire 97 (Cairo: Institut français d'archéologie orientale).

Haeny, Gerhard (1998) "New Kingdom 'Mortuary Temples' and 'Mansions of Millions of Years'". In Shafer, Byron E. (ed.) *Temples of ancient Egypt* (Ithaca NY; London: Cornell University Press; I.B. Tauris and Co. Ltd.), 86-126.

Hagen, Fredrik (2016), "Movements of the royal court". In J. van Dijk (Ed.) *Another Mouthful of Dust. Egyptological Studies in Honour of Geoffrey Thorndike Martin*. Orientalia Lovaniensia Analecta 246 (Leuven: Peeters), 155-181.

Hagen, Fredrik (2012), *An Ancient Egyptian Literary Text in Context. The Instruction of Ptahhotep*. Orientalia Lovaniensia Analecta 218 (Leuven: Peeters).

Hagen, Fredrik & Soliman, Daniel (2018), "Archives in Ancient Egypt, 2500-1000 BCE", In Alessandro Bausi, Christian Brockmann, Michael Friedrich, and Sabine Kienitz (Eds.) *Manuscripts and Archives: Comparative Views on Record-Keeping*, Studies in Manuscript Culture 11 (Berlin: De Gruyter), 71-170.

Hannig, Rainer (2006), *Großes Handwörterbuch Ägyptisch - Deutsch (2800-950 v. Chr.): die Sprache der Pharaonen (Marburger Edition)*, 4th revised edition, Kulturgeschichte der Antiken Welt 64 (Mainz am Rhein: Philipp von Zabern).

Haring, Ben (2014), "Workmen's Marks and the Early History of the Theban Royal Necropolis". In Toivari-Viitala, Jaana, Vartiainen, Turo, and Uvanto, Saara (Eds.) *Deir el-Medina Studies, Helsinki, June 24-26, 2009 Proceedings*, The Finnish Egyptological Society – Occasional Publications 2 (Vantaa, Finland: Multiprint), 87-100.

Haring, Ben (2013), "The Rising Power of the House of Amun". In García, Juan Carlos Moreno (Ed.) *Ancient Egyptian Administration* (Leiden: Brill), 607-637.

Haring, Ben (2009), "Workmen's Marks on ostraca from the Theban Necropolis: A Progress Report". In Haring, Ben and Kaper, Olaf E. (Eds.) *Pictograms or Pseudo Script? Non-Textual Identity Marks in Practical*

Use in Ancient Egypt and Elsewhere. Proceedings of a Conference in Leiden, 19-20 December 2006, Egyptologische Uitgaven 25 (Leiden: Peeters), 143-167.

Haring, Ben (2003), "From Oral Practice to Written Record in Ramesside Deir El-Medina". In *Journal of the Economic and Social History of the Orient*, Vol. 46, No. 3 (Leiden: Brill), 249-272.

Haring, Ben (1997), *Divine Households. Administrative and Economic Aspects of the New Kingdom Royal Memorial Temples in Western Thebes*, Egyptologische Uitgaven 11 (Leiden: Nederlands Instituut voor het Nabije Osten).

Hartwig, Melinda (2013), *The Tomb Chapel of Menna (TT 69). The Art, Culture, and Science of Painting in an Egyptian Tomb*, American Research Center in Egypt Conservation Series 5 (New York: The American University in Cairo Press).

Hartwig, Melinda (2004), *Tomb Painting and Identity in Ancient Thebes, 1419-1372 BCE*. Monumenta Aegyptiaca X (Turnhout: Brepols).

Hayes, William C. (1960), "A Selection of Tuthmoside Ostraca from Der el-Bahri". In *Journal of Egyptian Archaeology* 46 (London: Egypt Exploration Society), 29-52.

Hayes, William C. (1957), "Varia from the Time of Hatshepsut", 78-80. In *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo, band 15* (Wiesbaden: Otto Harrassowitz), 78-90.

Hayes, William C. (1955), *A papyrus of the Late Middle Kingdom in the Brooklyn Museum* (New York: Brooklyn Museum).

Hayes, William C. (1942), *Ostraka and Name Stones. From the tomb of Sen-Mut (No. 71) at Thebes*. The Metropolitan Museum of Art Egyptian Expedition Volume XV (New York: The Metropolitan Museum of Art).

Hays, Harold M. (2011), "On the Architectural Development of Monumental Tombs South of the Unas Causeway at Saqqara from the Reigns of Akhenaten to Ramses II". Bárta, Miroslav, Coppens, Filip, & Krejčí, Jaromir (Eds.) *Abusir and Saqqara in the year 2010* (Prague: Faculty of Arts, Charles University).

Helck, Wolfgang (1993) "Wer Konnte Sich ein Begräbnis in Theben-West Leisten?". In *Göttinger Miszellen* 135 (Göttingen: Seminar für Ägyptologie und Koptologie der Universität Göttingen), 39-40.

Helck, Wolfgang (1964), *Materialen zur Wirtschaftsgeschichte des Neuen Reiches (Teil V)* (Mainz: Akademie der Wissenschaften und der Literatur).

Helck, Wolfgang (1958), *Zur Verwaltung des Mittleren und des Neuen Reiches* (Leiden: Brill)

Helck, Wolfgang (1954), *Untersuchungen zu den Beamtentiteln: Des Ägyptischen Alten Reiches*, Ägyptologischen Forschungen, Heft 18 (Glückstadt: J. J. Augustin).

- Hirsch, Antoine Pierre (2013), *Ancient Egyptian Cubits – Origin and Evolution*, PhD thesis - Near and Middle Eastern Civilizations, University of Toronto (Ottawa: Library and Archives Canada).
- Hodder, Ian & Hutson, Scott (2003), *Reading the Past. Current Approaches to Interpretation in Archaeology*, Third Edition (Cambridge: Cambridge University Press).
- Hopkins, Keith (2002), "Rome, Taxes, Rents and Trade". In Scheidel, Walter & von Reden, Sitta (Eds.) *The Ancient Economy* (Edinburgh; Edinburgh University Press), 190-230.
- Hornung, Erik (1992), *History of Ancient Egypt*. Translated by D. Lorton (1999) (Edinburgh: Edinburgh University Press).
- Houston, Stephen, Baines, John, & Cooper, Jerrold (2003), "Last Writing: Script Obsolescence in Egypt, Mesopotamia, and Mesoamerica". In *Comparative Studies in Society and History* 45(3) (Cambridge: Cambridge University Press), 430-479.
- Janssen, Jac. J. (2004), *Grain Transport in the Ramesside Period. Papyrus Baldwin (BM EA 10061) and Papyrus Amiens*, Hieratic Papyri in the British Museum VIII (London: The British Museum Press).
- Janssen, Jac. J. (1997), *Village Varia. Ten Studies on the History and Administration of Deir el-Medina*, Egyptologische uitgaven 11 (Leiden: Nederlands Instituut voor het Nabije Oosten).
- Janssen, Jac J. (1979), "The Role of the Temple in The Egyptian Economy during the New Kingdom". In E. Lipinski (Ed.), *State and Temple Economy in the Ancient Near East II*, Orientalia Lovaniensia Analecta 5-6 (Leuven: Departement Oriëntalistiek), 505-515.
- Janssen, Jac. J. (1975a), *Commodity Prices from Ramessid Period. An Economic Study of the Village of Necropolis Workmen at Thebes* (Leiden: Brill).
- Janssen, Jac J. (1975b), "Prolegomena to the Study of Egypt's Economic History during the New Kingdom". In H. Altenmüller and D. Wildung (Eds.), *Studien zur Altägyptischen Kultur* 3 (Hamburg, Helmut Buske Verlag), 127-185.
- Jeffreys, David (2006) "Perunefer: at Memphis or Avaris?". In *Egyptian Archaeology* 28, 36-37.
- Kampp-Seyfried, Friederike (2003), "The Theban Necropolis: an overview of topography and tomb development from the Middle Kingdom to the Ramesside period". In Strudwick, Nigel and Taylor, John H. (Eds.) *The Theban Necropolis. Past, Present and Future* (London: British Museum Press), 2-10.
- Kampp, Friederike (1996), *Die Thebanische Nekropole. Zum Wandel des Grabgedankens von der XVIII. bis zur XX. Dynastie* (Mainz am Rhein: Philipp von Zabern).
- Katary, Sally L. D. (2013), "The Administration of Institutional Agriculture in the New Kingdom". In García, Juan Carlos Moreno (Ed.) *Ancient Egyptian Administration* (Leiden: Brill), 719-783.

- Katary, Sally L. D. (1989), *Land Tenure in the Ramesside Period* (Whitstable, Kent: Whitstable Litho Printers Ltd.).
- Kees, Hermann (1958), *Das Priestertum im ägyptischen Staat, vom Neuen Reich bis zur Spätzeit, Indices und Nachträge*. Probleme der Ägyptologie 1 (Leiden: Brill).
- Kemp, Barry J. (2012), *The city of Akhenaten and Nefertiti, Amarna and its people* (London: Thames & Hudson).
- Kemp, Barry J. (2006), *Ancient Egypt: Anatomy of a Civilization* (London: Routledge).
- Kemp, Barry J. (1979), "Reviewed Work: Commodity Prices from the Ramessid Period. An Economic Study of the Village of Necropolis Workmen at Thebes by Jac. J. Janssen". In *Journal of Egyptian Archaeology* 65 (London: Egypt Exploration Society), 182-187.
- Kemp, Barry & O'Connor, David (1974) "An Ancient Nile. Harbour University Museum at the Birket Habu". In *The International Journal of Nautical Archaeology and Underwater Exploration* 3.1 (London & New York: Council for Nautical Archaeology and the Seminar Press), 101-136.
- Kitchen, Kenneth A. (1991), "Building the Ramesseum". In *Cahiers de Recherches de l'Institut de Papyrologie et d'Égyptologie de Lille* 13 (Lille : Université Charles de Gaulle-Lille III), 85-93.
- Kitchen, Kenneth A. (1989), *Ramesside Inscriptions VII* (Oxford: B. H. Blackwell).
- Kitchen, Kenneth A. (1983), *Ramesside Inscriptions VI* (Oxford: B. H. Blackwell).
- Koh, Andrew J. (2006), "Locating the *ḥtm n pꜣ ḥr* of the Workmen's Village at Deir el-Medina". In *Journal of the American Research Center in Egypt* 42, 95-101.
- Kraus, Rolf (1984), "Reisegeschwindigkeit". In *Lexicon der Ägyptologie, Band V* (Wiesbaden: Otto Harrassowitz), 222-223.
- Laboury, Dimitri (2012), "Tracking Ancient Egyptian Artists, a Problem of Methodology. The Case of the Painters of Private Tombs in the Theban Necropolis during the Eighteenth Dynasty". In Kothay, Katalin Anna (Ed.) *Art and Society. Ancient and Modern Contexts of Egyptian Art. Proceedings of the International Conference held at the Museum of Fine Arts, Budapest, 13-15 May 2010* (Budapest: Museum of Fine Arts, Budapest), 199-208.
- Laboury, Dimitri & Taviers, Hugues (2010), "A la recherche des peintres de la nécropole thébaine sous la 18^e dynastie. Prolégomènes à une analyse des pratiques picturales dans la tombe d'Amenemopé (TT 29)". In Warmenbol, Eugène & Angenot, Valérie (eds), *Thèbes aux 101 portes: mélanges à la mémoire de Roland Tefnin*, Monumenta Aegyptica XII, Série IMAGO 3 (Turnhout: Brepols Publishers; Association Égyptologique Reine Élisabeth), 91-106.

Landström, Björn (1970), *Ships of the Pharaohs. 4000 Years of Egyptian Shipbuilding* (Stockholm: International Book Production).

Larkin, David B. (1980), "Titles and Epithets of Kheruef". In *The Epigraphic Survey* (Oriental Institute Publications Volume 102) *The Tomb of Kheruef. Theban Tomb 192* (Chicago: The Oriental Institute of the University of Chicago), 78-80.

Lee, Lorna and Quirke, Stephen (2000), "Painting Materials". In Nicholson, Paul T. and Shaw, Ian (Eds.) *Ancient Egyptian materials and technology* (Cambridge: Cambridge University Press), 104-120.

Lepsius, Carl Richard (1865), *Die alt-ägyptische Elle und ihre Eintheilung* (Berlin: Der Königlichen Akademie der Wissenschaften).

Lesko, Leonard H. (1982), *A Dictionary of Late Egyptian* (Berkeley: B.C. Scribe Publications).

Lüscher, Barbara (2013), *Die Vorlagen-Ostraka aus dem Grab des Nachtmin (TT 87)*, Beiträge zum Alten Ägypten 4 (Basel: Orientverlag).

MacKay, Ernest (1921), "The Cutting and Preparation of Tomb-Chapels in the Theban Necropolis". In *Journal of Egyptian Archaeology* 7 (London: Egypt Exploration Society), 154-168.

Malek, Jaromir (2012), *Topographical bibliography of ancient Egyptian hieroglyphic texts, statues, reliefs and paintings VIII: objects of provenance not known. Part 4: stelae (Dynasty XVIII to the Roman Period)* (Oxford: Griffith Institute).

Manniche, Lise (1988), *Lost tombs, a study of certain eighteenth dynasty monuments in the Theban Necropolis* (London: Kegan Paul International).

Manniche (1987), *The Tombs of the Nobles at Luxor*, (Cairo: The American University in Cairo Press / British Museum Publications).

Manniche, Lise (1986), "The Tomb of Nakht, the Gardener, at Thebes (No. 161) as Copied by Robert Hay". In *Journal of Egyptian Archaeology* 72 (London: Egypt Exploration Society), 55-78.

Manuelian, Peter Der & Loeben, Christian E. (1993), "New Light on the Recarved Sarcophagus of Hatshepsut and Thutmose I in the Museum of Fine Arts, Boston". In *Journal of Egyptian Archaeology* 79 (London: Egypt Exploration Society), 121-155.

Martin, Geoffrey T. (1997), *The tomb of Tia and Tia, a royal monument of the Ramesside period in the Memphite Necropolis*, Egypt Exploration Society, Excavation Memoir 58 (London: Egypt Exploration Society).

Martin, Geoffrey T. (1989), *The Memphite Tomb of Horemheb, Commander-in-Chief of Tutankhamun I, The Reliefs, Inscriptions, and Commentary*, Excavation Memoir 55 (London: Egypt Exploration Society).

- Martin, Geoffrey T. (1985), *The Tomb-Chapels of Paser and Ra'ia at Saqqâra*, Egypt Exploration Society, Excavation Memoir 52 (London: Egypt Exploration Society).
- Martin, Geoffrey T., Raven, Maarten J., Aston, Barbara Greene & Van Dijk, Jacobus (1988), "The Tomb of Maya and Meryt: Preliminary Report on the Saqqâra Excavations, 1987-8", 2. In *Journal of Egyptian Archaeology* 74 (London: Egypt Exploration Society), 1-14.
- McDowell, Andrea Griet (1990), *Jurisdiction in the Workmen's Community of Deir el-Medina*, Egyptologische Uitgaven 5 (Leiden: Nederlands Instituut voor het Nabije Oosten).
- Megally, Mounir (1981), "Un intéressant ostracon de la XVIIIe dynastie de Thèbes". In *Bulletin de l'Institut Français d'Archéologie Orientale* 81 (supplément: bulletin du centenaire) (Cairo: Institut français d'archéologie orientale), 293-312.
- Meyer, Christine (1982), *Senenmut: eine prosopographische Untersuchung*, Hamburger ägyptologischen Studien 2 (Hamburg: Verlag Borg).
- Mogensen, Maria (1919), *Stèles égyptiennes au Musée National de Stockholm* (Copenhagen: Høst).
- Morris, Ian & Manning, J. G. (2005a), "The Economic Sociology of the Ancient Mediterranean World". In Smelser, Neil J. & Swedberg, Richard (Eds.) *The Handbook of Economic Sociology*, Second Edition (Princeton: Princeton University Press), 131-159.
- Morris, Ian & Manning, J. G. (2005b), "Introduction". In Smelser, Neil J. & Swedberg, Richard (Eds.) *The Ancient Economy. Evidence and Models* (Stanford: Stanford University Press), 1-44.
- Muhs, Brian (2016), *The Ancient Egyptian Economy, 3000-30 BCE* (New York: Cambridge University Press).
- Müller, Matthias (2014), "Es werde Licht? Eine kurze Geschichte von Öl & Fett in Deir el-Medina in der 20. Dynastie". In Haring, Kaper & Van Walsem (Eds.) *The Workman's Progress. Studies in the village of Deir el-Medina and other documents from Western Thebes in Honour of Rob Demarée* (Leiden: Peeters), 180.
- Müller, Miriam (2014), "Deir el-Medina in the Dark - the Amarna period in the history of the village". In Toivari-Viitala, Jaana, Vartiainen, Turo, and Uvanto, Saara (Eds.) *Deir el-Medina Studies, Helsinki, June 24-26, 2009 Proceedings*, The Finnish Egyptological Society – Occasional Publications 2 (Vantaa, Finland: Multiprint), 154-167.
- Murnane, William J. (1995), *Texts from the Amarna Period in Egypt*, Writings from the Ancient World, Society of Biblical Studies, vol. 5 (Atlanta: Scholars Press).
- Murnane, William J. & van Siclen, Charles C. (1993), *The Boundary Stelae of Akhenaten* (New York: Kegan Paul International).
- Nasr, Mohammed (1993), "The Theban Tomb 260 of User". In *Studien zur Altägyptischen Kultur* 20 (Hamburg: Helmut Buske Verlag GmbH), 173-202.

- Nasr, Mohammed (1988), "The Theban Tomb 261 of Kha'emwese in Dra' Abu el-Naga'". In *Studien zur Altägyptischen Kultur* 15 (Hamburg: Helmut Buske Verlag GmbH), 233-242.
- Nasr, Mohammed (1985), "The Tomb of Thay (Theban No. 349)". In *Studien zur Altägyptischen Kultur* 12 (Hamburg: Helmut Buske Verlag GmbH), 75-100.
- Navratilova, Hana & Allon, Niv (2017), *Ancient Egyptian scribes: a cultural exploration* (London: Bloomsbury).
- Newberry, Percy E. (1893), *Beni Hasan, Part I*, Archaeological Survey of Egypt 1 (London: Egypt Exploration Fund / Kegan Paul, Trench, Trübner & Co., Ltd.).
- Nims, Charles (1980), "The Tomb". In *The Epigraphic Survey* (Oriental Institute Publications Volume 102) *The Tomb of Kheruef. Theban Tomb 192* (Chicago: The Oriental Institute of the University of Chicago), 1-16.
- Niwinski, Andrzej *et al.* (1999), "Deir el-Bahari Cliff Mission, 1999". In *Polish Archaeology in the Mediterranean XI, Reports 1999* (Warsaw: Polish Centre of Mediterranean Archaeology (PCMA), University of Warsaw), 173-182.
- North, Douglass (1977), "Markets and Other Allocation Systems in History: The Challenge of Karl Polanyi". In *Journal of European Economic History* 6, 703-716.
- Nuzzolo, Massimiliano (2017), "Patterns of tomb placement in the Memphite necropolis". In Bárta, Miroslav, Coppens, Filip, & Krejčí, Jaromir (Eds.) *Abusir and Saqqara in the year 2015* (Prague: Faculty of Arts, Charles University).
- O'Connor, David (2006), "Thutmose III: An Enigmatic Pharaoh". In Cline, Eric H. and O'Connor, David (Eds.), *Thutmose III - A New Biography* (Ann Arbor: The University of Michigan Press), 1-38.
- Onstine, Suzanne Lynn (2005), *The Role of the Chantress (šmꜣyt) in Ancient Egypt*, BAR International Series 1401 (Oxford: Archaeopress).
- Otlet, Paul (1934), *Traité de documentation* (Brussels: Editiones Mundaneum).
- Papazian, Hratch (2013), "The Central Administration of the Resources in the Old Kingdom: Departments, Treasuries, Granaries and Work Centers". In García, Juan Carlos Moreno (Ed.), *Ancient Egyptian Administration* (Leiden: Brill), 41-83.
- Papazian, Hratch (2012), *Domain of pharaoh: the structure and components of the economy of Old Kingdom Egypt*, Hildesheimer Ägyptologische Beiträge 52 (Hildesheim: Gerstenberg).
- Parkinson, Richard (2009), *Reading Ancient Egyptian Poetry. Among Other Histories* (Chichester, England: John Wiley & Sons Ltd.).

- Peet, T. Eric (1930), *The great tomb-robberies of the 20. Egyptian dynasty, being a critical study, with translations and commentaries of the papyri in which these are recorded* (Oxford: Clarendon Press).
- Piccione, Peter A. (2001), *Theban Tombs Publication Project: Theban Tombs No., 72 (Ray) and 121 (Ahmose): A report to the permanent committee of the SCA 2001 Field Season, Annales du Service des Antiquités de l'Égypte 79* (Cairo: Conseil Suprême des Antiquités de l'Égypte), 127-135.
- Pinarello, Massimiliano Samuele (2015), *An Archaeological Discussion of Writing Practise. Deconstruction of the Ancient Egyptian Scribe*, GHP Egyptology 23 (London: Golden House Publications).
- Pleyte, Willem & Rossi, Francesco (1869-1876), *Papyrus de Turin, vol. I-II* (Leiden: Brill).
- Polanyi, Karl (2001), *The Great Transformation. The Political and Economic Origins of Our Time*, Second edition (Boston: Beacon Press).
- Polanyi, Karl (1957), "Aristotle discovers the economy". In Polanyi, Karl, Arensberg, Conrad & Pearson (Eds.). *Trade and market in the early empires: economies in history and theory*. (Glencoe, Illinois: The Free Press), 64-94.
- Polz, Daniel (1997), *Das Grab des Hui und des Kel, Theben Nr. 54*, Archäologische Veröffentlichungen 74 (Mainz am Rhein: Philipp von Zabern).
- Polz, Daniel (1991), "Jamunedjeh, Meri und Userhat". In *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo, band 47. Festschrift für Werner Kaiser* (Mainz am Rhein: Philipp von Zabern), 281-291.
- Porter, Bertha & Moss, Rosalind L. B. (1960), *The Theban Necropolis. Part 1. Private Tombs*, Topographical Bibliography of Ancient Egyptian Hieroglyphic Texts, Reliefs, and Paintings, Second Edition (Oxford: Griffith Institute, Ashmolean Museum).
- Posener-Kriéger, Paule (1996), "Au plaisir des paléographes: papyrus Caire JE 52003". In Manuelian, Peter Der (Ed.), *Studies in honor of William Kelly Simpson 2* (Boston: Museum of Fine Arts), 655-664.
- Posener-Kriéger, Paule (1981), "Construire une tombe à l'ouest de mn-nfr (P Caire 52002)". In *Revue d'égyptologie 33* (Leuven: La Société Française d'Égyptologie, Peeters), 47-58.
- Quibell, James Edward & Oliver, A. (1926), "An ancient Egyptian horse", 172-173. In *Annales du Service des Antiquités de l'Égypte 26* (Cairo: Institut français d'archéologie orientale), 172-176.
- Quirke, Stephen (2004), *Titles and bureaux of Egypt 1850-1700 BC* (London: Golden House Publications).
- Quirke, Stephen (1999), "Women in Ancient Egypt: Temple Titles and Funerary Papyri". In Leahy, Anthony & Tait, John (Eds.) *Studies on Ancient Egypt in Honour of H. S. Smith*, Occasional Publications 13 (London: The Egypt Exploration Society), 227-235.

- Quirke, Stephen (1990), *The Administration of Egypt in the Late Middle Kingdom. The Hieratic Documents* (Whitstable, Kent: Whitstable Litho Printers Ltd.).
- Quirke, Stephen (1986), "The Regular Titles of the Late Middle Kingdom". In *Revue d'Égyptologie* 37, Société Française d'Égyptologie (Leuven: Peeters), 107-130.
- Ramond, Pierre (1977), *Les Stèles Égyptiennes du Musée G. Labit à Toulouse*, Bibliothèque d'études 62 (Cairo: Institut Français d'Archéologie Orientale).
- Ranke, Hermann (1935), *Die ägyptischen Personennamen, band 1* (Glückstadt: J. J. Augustin).
- Raven, Maarten J. (2005), *The Tomb of Pay and Raia at Saqqara*, Egypt Exploration Society, Excavation Memoir 74 (London/Leiden: Egypt Exploration Society and the National Museum of Antiquities Leiden).
- Raven, Maarten J. (2000), "Twenty-five years of work in the New Kingdom necropolis of Saqqara: Looking for structure". In Bárta, Miroslav & Krejčí, Jaromir (Eds.) *Abusir and Saqqara in the year 2000* (Prague: Faculty of Arts, Charles University).
- Raven, Maarten J. & Van Walsem, René (2014), *The Tomb of Meryneith at Saqqara* (Turnhout, Belgium: Brepols Publishers).
- Richards, Janet (2005), *Society and death in ancient Egypt; mortuary landscapes of the Middle Kingdom* (Cambridge: Cambridge University Press).
- Robins, Gay (1994), *Proportion and style in ancient Egyptian art* (London: Thames and Hudson).
- Röder, Josef (1965), "Zur Steinbruchgeschichte des Rosengranits von Assuan". In *Archäologischer Anzeiger* 3. Beiblatt zum Jahrbuch des Deutschen Archäologischen Instituts 80 (Berlin: Walter de Gruyter & Co.), 476-552.
- Romer, John (1994), "Who Made the Private Tombs of Thebes?". In Bryan, Betsy & Lorton, David (Eds.), *Essays in Egyptology in honor of Hans Goedicke* (San Antonio: Van Sicklen), 211-232.
- Romer, John (1974), "Tuthmosis I and the Bibân El-Molûk: Some Problems of Attribution". In *Journal of Egyptian Archaeology* 60 (London: Egypt Exploration Society), 119-133.
- Rossi, Corinna (2010), *Architecture and Mathematics in Ancient Egypt* (Cambridge; Cambridge University Press).
- Saad, Ramadan & Manniche, Lise (1971), "A Unique Offering List of Amenophis IV Recently Found at Karnak". In *Journal of Egyptian Archaeology* 57 (London: Egypt Exploration Society), 70-72.
- Scharff, Alexander (1924), "Briefe aus Illahun". In *Zeitschrift für Ägyptische Sprache und Altertumskunde* 59 (Leipzig: J. C. Hinrichs'sche Buchhandlung), 20-51.

- Scheidel, Walter & von Reden, Sitta (2002), "Introduction". In Scheidel, Walter & von Reden, Sitta (Eds.) *The Ancient Economy* (Edinburgh; Edinburgh University Press), 1-8.
- Schiller, Birgit (2013), "On the Administration and Organization of Harbors in the New Kingdom". In *Journal of the Society for the Study of Egyptian Antiquities* 39 2012-13 (Toronto: The Society for the Study of Egyptian Antiquities), 211-217.
- Schneider, Hans D. (2012), *The Tomb of Iniua in the New Kingdom Necropolis of Memphis at Saqqara* (Turnhout, Belgium: Brepols Publishers).
- Schneider, Harold K. (1974), *Economic Man: The Anthropology of Economics* (New York: The Free Press).
- Schumpeter, Joseph A. (1954), *History of Economic Analysis* (New York: Oxford University Press).
- Seidlmayer, Stephan J. (2001), "Necropolis". In Redford, Donald (Ed.) *The Oxford Encyclopaedia of Ancient Egypt* (Oxford: Oxford University Press), 506-512.
- Sethe, Kurt (1927), *Erläuterungen zu den aegyptischen Lesestücken* (Leipzig: J. C. Hinrichs'sche Buchhandlung).
- Sethe, Kurt (1914), *Urkunden der 18. Dynastie I. Bearbeitet und Übersetzt* (Leipzig: J. C. Hinrichs'sche Buchhandlung).
- Shaw, Ian (Ed.) (2000), *The Oxford History of Ancient Egypt* (New York: Oxford University Press).
- Smelser, Neil J. & Swedberg, Richard (2005), "Introducing Economic Sociology". In Smelser, Neil J. & Swedberg, Richard (Eds.) *The Handbook of Economic Sociology*, Second Edition (Princeton: Princeton University Press) , 3-25.
- Smith, Stuart Tyson (2003), *Wretched Kush. Ethnic identities and boundaries in Egypt's Nubian Empire* (London: Routledge).
- Snape, Steven (2011), *Ancient Egyptian Tombs. The Culture of Life and Death* (Chichester, England: John Wiley & Sons Ltd.).
- Snell, David C. (1997), *Life in the Ancient Near East, 3100-322 B.C.E.* (New Haven: Yale university Press).
- Soliman, Daniel (2017), "The contextualisation of a tomb construction dossier from Saqqara". In *Saqqara Newsletter* 15 (Leiden: Friends of Saqqara Foundation), 32-38.
- Soliman, Daniel (2015), "Workmen's marks in pre-Amarna tombs at Deir el-Medina". In Budka, Julia, Frank Kammerzell, and Sławomir Rzepka (Eds.), *Non-textual marking systems in ancient Egypt (and elsewhere)* (Hamburg: Widmaier), 109-132.

- Spalinger, Anthony (1977), "A Critical Analysis of the "Annals" of Thutmose III (Stücke V-VI)". In *Journal of the American Research Center in Egypt* 14, 41-54.
- Staring, Nico (2016), "The tomb of Ptahemwia at Saqqara". In *Journal of Egyptian Archaeology* 102 (London: Egypt Exploration Society), 145-170.
- Steindorff, Georg & Wolf, Walther (1936), "Die Thebanische Gräberwelt", *Leipziger Ägyptologische Studien* 4 (Glückstadt ; Hamburg: J. J. Augustin), 44-47.
- Stevens, Anna (2012), *Akhenaten's Workers: The Amarna Stone Village Survey, 2005-2009. Volume I: The Survey, Excavations and Architecture* (London: Egypt Exploration Society).
- Strudwick, Nigel (2016), *The Tomb of Pharaoh's Chancellor Senneferi at Thebes (TT99)* (Oxford: Oxbow Books).
- Strudwick, Nigel (2000), "The Theban Tomb of Senneferi: An Overview of Work Undertaken from 1992 to 1999". In *Memnonia* 11 (Cairo: Dar Namatallah Press), 241-266.
- Strudwick, Nigel and Strudwick, Helen M. (1996), *The tombs of Amenhotep, Khnummose, and Amenmose at Thebes, (nos. 294, 253, and 254)* (Oxford: Griffith Institute, Ashmolean Museum).
- Strudwick, Nigel (1985), *The Administration of Egypt in the Old Kingdom. The Highest Titles and their Holders* (London: KPI).
- Sullivan, E. & Harrower, M. (2015), "The future of spatial technologies in Egyptology". In Jasnow, Richard and Kathlyn M. Cooney (Eds.), *Joyful in Thebes: Egyptological studies in honor of Betsy M. Bryan* (Atlanta: Lockwood Press), 447-459.
- Swedberg, Richard (1997), "New Economic Sociology. What Has Been Accomplished, What Lies Ahead?". In *Acta Sociologica* 40, No. 2, Journal of the Scandinavian Sociological Association (London: Sage Publications), 161,182.
- Säve-Söderbergh (1957), *Private Tombs at Thebes, Vol. I. Four Eighteenth Dynasty Tombs* (Oxford: Griffith Institute).
- Tallet, Pierre (2017), *Les Papyrus de la Mer Rouge I. Le « journal de Merer » (Papyrus Jarf A et B)*, Mémoires publiés par les membres de l'Institut français d'archéologie orientale 136 (Cairo: Institut français d'archéologie orientale).
- Trigger, Bruce G., Kemp, Barry J., O'Connor, David & Lloyd, Alan B. (2001), *Ancient Egypt: A Social History* (Cambridge: Cambridge University Press).
- Trigger, Bruce G. (1998), "Writing systems - A case study in cultural evolution". In *Norwegian Archaeological Review* 31.1 (Taylor & Francis), 39-62.

- Trigger, Bruce G. (1989), *A History of Archaeological Thought* (Cambridge: Cambridge University Press).
- Uphill, Eric P. (1975), "The Office *sdꜣwty bity*". In *Journal of Egyptian Archaeology* 61 (London: Egypt Exploration Society), 250.
- Urton, Gary (2002), "An Overview of Spanish Colonial Commentary on Andean Knotted-String Records". In Quilter, Jeffrey, and Gary Urton, (Eds.), *Narrative Threads* (Austin: University of Texas Press), 3-25.
- Valbelle, Dominique (1991), "Les plus anciennes listes connues de personnel auxiliaire (*smdt*) : les tablettes hiéroglyphiques CGC 25367 et 25368". In *Cahiers de Recherches de l'Institut de Papyrologie et d'Égyptologie de Lille* 13 (Lille : Université Charles de Gaulle-Lille III), 123-128.
- Van den Boorn, Guido P. F. (1988), *The Duties of the Vizier. Civil Administration in the Early New Kingdom* (London: Kegan Paul International).
- Van De Mieroop, Marc (2004), "Economic Theories and the Ancient Near East". In Rollinger, Robert & Ulf, Christoph (Eds.) *Commerce and Monetary Systems in the Ancient World: Means of Transmission and Cultural Interaction*. Proceedings of the Fifth Annual Symposium of the Assyrian and Babylonian Intellectual Heritage Project. Held in Innsbruck, Austria, October 3rd-8th 2002. Melammu Symposia V (München: Franz Steiner Verlag), 54-64.
- Van Dijk, Jacobus (2000), "The Amarna Period and the Later New Kingdom". In Shaw, Ian (Ed.), *The Oxford History of Ancient Egypt* (Oxford: Oxford University Press), 272-313.
- Van Dijk, Jacobus (1993), *The New Kingdom necropolis of Memphis: Historical and Iconographical Studies* (Groningen: Rijksuniversiteit Groningen).
- Van Dijk, Jacobus (1988), "The Development of the Memphite Necropolis". In Zivie, Alain-Pierre (Ed.) *Memphis et ses nécropoles au Nouvel Empire. Nouvelles données, nouvelles questions. Actes du Colloque International CNRS. Paris, 9 au 11 octobre 1986* (Paris: Centre National de la Recherche Scientifique), 37-46.
- Ventura, Raphael (1988), "The Largest Project for a Royal Tomb in the Valley of the Kings". In *Journal of Egyptian Archaeology* 74 (London: Egypt Exploration Society), 137-156.
- Ventura, Raphael (1986), *Living in a City of the Dead. A Selection of Topographical and Administrative Terms in the Documents of the Theban Necropolis*, Orbis Biblicus et Orientalis 69 (Freiburg: Universitätsverlag).
- Warburton, David Alan (2016), *The Fundamentals of Economics. Lessons from the Bronze Age Near East* (Neuchâtel: Recherches et Publications).
- Warburton, David Alan (1997), *State and economy in ancient Egypt, fiscal vocabulary of the New Kingdom*. Orbis Biblicus et Orientalis 151 (Freiburg: Universitätsverlag).
- Ward, William A. (1982), *Index of Egyptian Administrative and Religious Titles of the Middle Kingdom* (Beirut: American University of Beirut).

Wasmuth, Melanie (2003), *Innovation und Extravaganzen. Ein Beitrag zur Architektur der thebanischen Beamtengräber der 18. Dynastie*. BAR International Series 1165 (Oxford: Archaeopress).

Weber, Max (1909), *The Agrarian Sociology of Ancient Civilizations*. Translated by R. I. Frank (1976) (London: NLB).

Weeks, Kent R. (2011), "Introduction to the Valley of the Kings". In Weeks, Kent R. (Ed.) *Valley of the Kings. The tombs and the funerary temples of Thebes West* (Vercelli, Italy: White Star Publishers), 112-123.

Weil, Arthur (1908), *Die Veziere des Pharaonenreiches* (Straßburg: Schlesier & Schweikhardt).

Werbrouck, Marcelle & Van de Walle, B. (1929), *La tombe de Nakht: notice sommaire*, Musées Royaux d'Art et d'Histoire (Bruxelles: Fondation Égyptologique "Reine Élisabeth").

Whale, Sheila (1989), *The family in the eighteenth dynasty of Egypt, a study of the representation of the family in private tombs*, Australian Centre for Egyptology: studies 1 (Sydney: Australian Centre for Egyptology).

Zivie, Alain (2013), *La Tombe de Thoutmes. Directeur des Peintres dans la Place de Maât* (Toulouse: Caracara Edition).

Zivie, Alain (2009), *La Tombe de Maïa. Mère Nourricière Roi Toutânkhamon et Grande du Harem* (Toulouse: Caracara Edition).

Appendix 1 - Translations of the Saqqara Dossier

P. Cairo 52002 - Recto (52002R)

(1) Year 15 under the Majesty, King of Upper and Lower Egypt, Lord of the Two Lands, Usermaatre, Beloved of Amun, L.P.H., Son of Re, Lord of Appearances like Amun-Re, King of the Gods, Great of Kingship like (2) Atum, Ramesses, Ruler of Heliopolis, L.P.H., Beloved of Re-Horakhty and Seth (Sutekh), Great of Strength, Son of Nut, given life forever and ever. (3) On this day: One (the king) was in Piramesse (the house of Ramesses, Beloved of Amun, L.P.H., the Great Ka of Re-Horakhty, King of the Gods, L.P.H., Powerful and Strong). (4) Record of all the tasks that will be done in the building site at the Place of Eternity for the royal scribe and general, Mai, who is building it (in) the West of Memphis by (through) the workmen (people) under the supervision of the scribe Buqentuf. (5) Year 15, month 4 of Peret, day 6. The scribe Buqentuf arrived in the town of Memphis to give the document of the officials (back) to them. Passing the night in this place. (6) Year 15, month 4 of Peret, day 7. Going up to the West of Memphis to inspect the building site and the on-going work. However, none of the tasks were found, (so) he (tried to) make a gathering/assembly, but the workmen had gone home and it was not a proper task/commission. (7) On this day at the time of sunset the chantress of Thoth, Ta-Renenut, arrived at Memphis to “represent” (*nhp*) the Vizier. (8) Year 15, month 4 of Peret, day 8. The chantress of Thoth, Ta-Renenut, went up to the West of Memphis (to) inspect their building site, which they placed (?) complete (?). She said: “Do not approach it, indeed, it (must) be completed for you as a perfect/completed building site” [...] (9) Year 15, month 4 of Peret, day 9. The scribe Buqentuf journeyed with (both) the workmen under his authority and a boat for his/its provisions, to the town of Pakakemet to load the rations for the workers who are in the charge of the chantress of Thoth, Ta-Renenut. This day (10) arrival at Pakakemet at the time of sunset. Passing the night in this place. (11) Year 15, month 4 of Peret, day 10. Receiving the 58 *khar* and 3 *oipe* of emmer as rations for the workers from the scribe Bepasau, guardian of the house of Hori (12) and robe of 160 cubits for demarcating the field (the building site). The day of “equipping” of the building site, which is in/done by (the hand of) the scribe Buqentuf, (13) who received in the house of the general and in a giving by the scribe Neferabu, copper for 2 chisels, making 12 deben, (meant) for the mason Ramose (14) and 2 good quality cords of 25 cubits (each). Brought (or bought) from the property of the scribe Khamdjedtu: a young male donkey, which is for the building site. (15) Year 15, month 4 of Peret, day 11. Journey from this place at the time of dawn and arrived at the harbour of Pekhemet. Passing the night in this place after the ‘equipment’ of the scribe Buqentuf was brought aboard (the boat). (16) Year 15, month 4 of Peret, day 12. Journey from this place at dawn and arrived at the town of Memphis. Passing the night in this place. (17) Year 15, month 4 of Peret, day 13. Emptying the boat of rations. The rations of the workmen were carried to its/his storehouse and the boat was handed back to its owners.

P. Cairo 52002 - Verso (52002V)

(1) Year 15, month 4 of Peret, day 14. One was in Piramesse (the House of Ramesses – Beloved of Amun, L.P.H., the Great Ka of Re-Horakhty, King of the Gods, L.P.H., Powerful and Strong). (2) Beginning of the ordered (work) by the workmen clearing in the forecourt, which is in the temple/slope/hill (?) before the masons (can begin) by the workmen, who are under the supervision of the scribe Buqentuf. (3) That which was done in clearing this day: (length:) 12 cubits, width: 6 cubits, depth: 3 cubits, making 21 cubits. (4) Year 15, month 4 of Peret, day 15. Second day of clearing completed before the masons by the workmen, who are under the supervision of the scribe Buqentuf. (5 - Inverted to the other lines) To the Majesty, King of Upper and Lower Egypt, Lord of the Two Lands, Usermaatre, Beloved of Amun, L.P.H.

P. Cairo 52003 - Recto (52003R)

(1) Year 15, first month of Shemu, day 9. One (the king) was in Piramesse (the House of Ramesses, Beloved of Amun, L.P.H., the Great Ka of Re-Horakhty). (2) The 15th day of tasks by the workmen who are under the authority of the scribe Buqentuf. (3) (What was) done in clearing this day: (result not recorded). (4) Year 15, first month of Shemu, day 10. The 16th day of tasks by the workmen who are under the authority of the scribe Buqentuf. (5) (What was) done as work this day: (result not recorded). (6) The farmer (?) Ptahmose, called 'the Syrian', son of Penduau (from) the high ground of Memphis by (7) the great canal of Baenre - Beloved of Amun (Merenptah), L.P.H., who stole/took/delivered one document (inventory/commission?) from (the owner of) the boat of the building site, Ipa. (8) Year 15, first month of Shemu, day 13. Second day of "preparing the ground" in the "*nḥb*"-way of the "place" of the tomb. (9) Year 15, first month of Shemu, day 14. Third day of "preparing the ground" in the "*nḥb*"-way of the tomb. (10) [...] cubit [...] width 4 cubits and 3 palms. (11) [Year 15, first month of Shemu, day] 18. Sixth day of "preparing the ground" in the "*nḥb*"-way of (12) [...] the tomb (?) by the workmen who are under the authority of the scribe Buqentuf. (13) What was done in "preparing the ground" this day: (in length) 12 cubits, (in) width 5 cubits and 5 palms. Making (the total) 17 cubits and 5 palms. (14) Year 15, first month of Shemu, day 19. Eighth day of building stone in the "house". Built (so far): 7 cubits. (15) What was done in building this day: 8 stone bricks (of) 2 cubits and 5 palms (in length), width (of) 1 (cubit) and 2 palms, and thickness (of) 6 palms. 12 (16) bricks since beginning. (In) total: (result not recorded) bricks. (17) Year 15, first month of Shemu, day 20. Ninth day of "preparing the ground" in the way of the "central room" (nfrw). (18) What was done in "preparing the ground" this day: (in length:) 13 cubits, width: 6 cubits, and height: 4 cubits.

P. Cairo 52003 - Verso (52003V)

(1) (To the) Fan-bearer on the Right side of the King, the Royal scribe and General Mai. The scribe Buqentuf greets his Lord (2) in Life, Health, and Prosperity. A communication to let my Lord know: Further, letting my Lord be aware of what has been done (concerning) the Lord's (commanded) task (3) which my Lord placed upon me to do very well, (being as) sturdy as bronze, without my Lord finding faults in me. (4) Further, communicating (to) the King of Upper and Lower Egypt, Lord of the Two Lands, Usermaatre, Beloved of Amun, L.P.H., Son of Re, Lord of Appearances like Amun-Re, King of the Gods, (5) Ramesses, Ruler of Heliopolis, L.P.H., Beloved of Re-Horakhty and Seth, Great of Strength, Son of Nut, (6) the King of Upper and Lower Egypt, Lord of the Two Lands, Usermaatre, Beloved of Amun, L.P.H., Son of Re, Lord of Appearances like Atum, Lord of the Two Lands (in) Heliopolis, (7) Ramesses, Ruler of Heliopolis, L.P.H., Beloved of Re-Horakhty and Seth, Great of Strength, (8) Son of Nut [...]

P. MMA 3569 + Vienna 3934/3937 + 9352 - Recto, Text A, Column I (MMAV-RA1)

(1) Regnal year 16 under the King of Upper and Lower Egypt, Lord of the Two Lands, Usermaatre, Beloved of Amun, L.P.H., son of Re, Lord of Appearances, like Amun-Re, King of Gods, (2) Ramesses, Ruler of Heliopolis, L.P.H., Beloved of Re-Horakhty and Seth, Great of Power, Son of Nut, given life forever and ever. (3) On this day: One was in Heliopolis (The House of Usermaatre, Beloved of Amun, L.P.H., the One who illuminates Heliopolis, House of the King, L.P.H., Powerful and Strong, eternal and enduring of Sed-Festivals). (4) Writing of the name list of the people of the soldiers [...] Chiefs of the Weapon-carriers; troop of sailors of [...] (5) troop of sailors of [...] plough / ploughing the excess *khato*-lands of the Pharaoh L.[P.H. ...] (6) in the western river [...] of the House of Millions of Years of King of Upper and Lower Egypt, Ramesses [L.P.H. ...] (7) deputy [...] of the Army, Stable Master of the Army [...] (8) Army scribe [...] true [...] Army scribe Naherhu (9) Re-Hor[akhty ...] done in his wish(?)[...]

P. MMA 3569 + Vienna 3934/3937 + 9352 - Recto, Text A, Column II (MMAV-RA2)

(1) [Regnal year [...] under the Majesty of Horus, the Powerful Ka, Great of Kingship, (2) The Two Ladies, Great of Sed-Festivals like Tatenen, the Golden Horus, (3) Strong of Years like Atum, the Sovereign, the Protector of Egypt, who bends the foreign lands, (4) the King of Upper and Lower Egypt, Lord of the Two Lands, Usermaatre, Beloved of Amun, L.P.H., Son of Re, Lord of Appearances, like] Amun-Re, King of Gods, (5) Ramesses, Ruler of Heliopolis, L.P.H., Beloved of Re-Horakhty and Seth, Great of Power, (6) [Son of Nut, given life forever and ever ...] (x + 1) [...]his [...] (x + 2) [...] (x + 3) [...] in L.P.H. this sending to cause his Majesty to know (x + 4) [...] the First Prophet (?) of Re (x + 5) Strong Bull [...]

P. MMA 3569 + Vienna 3934/3937 + 9352 - Verso, Text A (MMAV-VA)

(1) Fan-bearer on the Right side of the king (2) Fan-bearer on the Right Side of the King (3) in L.P.H., in the praise of the Amun-Re, King of the Gods (4) our Lord, L.P.H., the Perfect One (?), L.P.H.. One was saying to Re-Horakhty and (5) to all the Gods, the Chiefs of the Land, may you cause that the Pharaoh is healthy, L.P.H., our Lord, L.P.H., the Perfect One. Cause that [he does ...] (6) Millions of Sed-festivals, while he (functions) as Ruler, L.P.H. Great One of the Entire Land for eternity [...] (7) and say that I heard the message which you made to me, greeting [...] (8) Thot, and all Gods on earth: Cause that I (can) message you and that you heard the message which I sent [...] (9) concerning the word from the Stable Master Hatia [...] son of Nakhtamun (10) the Stable Master Raiay, son of Kha-[...] -mai (?) [...] (11) [...] Brave and Strong [...] (12) [...] [Amenemwia] son of Nakhta[mun (?)]... perfect [...]

P. MMA 3569 + Vienna 3934/3937 + 9352 - Recto, Text B (MMAV-RB)

(1) [...] (2) [...] (3) Receiving [...] on this day the [...] who carried plaster for/to [...] Buqen]tuf with the plaster [5]51. Total plaster [...] (4) On this day: [...] at the time of morning the transportation boat arrived which is loaded with the equipment and *hṭp*-baskets [...] (5) Large [...] 14 cubits; onions: 100 [...] Cut off [...] salt/plant [...] 4 sacks (6) (of) reeds, 140 *hṭp*-baskets, 8 'jackal'-sandals (?) ; completing 7; total 1.

P. MMA 3569 + Vienna 3934/3937 + 9352 - Verso, Text B (MMAV-VB)

(1) [...] (2) Regnal year [...] On this day [...] (3) Regnal year 16, month 2 of Akhet (?), cutting stone (blocks) [...] breaking through [...] (4) in the tomb [...] bringing down that which was done; the sarcophagus was completed (?) [...] he/it (5) What was done in cutting stone (blocks) this day: (length:) 1 cubit 2 palms; width: 4 cubits; depth: 1 cubit (6) What was done in clearing (*hm*^c) stones this day: 1 cubit 3 palms. (7) Done (?) [...] the [...] came with oil, curd and [...] (8) Regnal year 16, month 3 of Akhet season, day, [...]the boat arrived, loaded with the bricks which were tall, at the front (?) (9) (Done this day:) those who were there (?) 200 [...] Total: 197 (10) (Regnal year 16, month 3 of Akhet, day [...]) done [...] (11) [...] [the chantress of Thot] Tarennut [...] (12) [...] (13) [...] (length:) 1 cubit; width: 4 cubits; depth: 1 cubit, 4 palms, making 6 cubits 1 palm (13a) [...] making 8 cubits, 4 palms (14) [...] making [...] the tomb of (length:) 1 cubit, width: 6 cubits, depth: 1 cubit 1 palm. (15) [Regnal year 16 ...] 12 (16) [Done ...] 300 [...] 40, plaster 551.

P. MMA 3569 + Vienna 3934/3937 + 9352 - Verso, Text C (?) (MMAV-VC)

(x+1) [...] Ptahy (x+2) [...] of the Royal Fan-bearer on the Right [Side of the King ...] (x+3) [...] the Royal Fan-bearer] on the Right Side of the King, Royal Scribe, Overseer of the Treasury [...]

Appendix 2 - Translations of the Senenmut ostraca

O. 62 (1) Year 7, month 4 of Peret, day 2. Work begins (2) in the tomb on this day (of the project). 11 masons (3) who did 1 *nbi* in depth by 6 *nbi* in width, (4) beside 1 cubit in “entering towards the interior”. (5) Those who measured (or cut the measured(?)): 30 men who did (6) 29 *nbi*

O. 63 *Recto* - (1) Month 4 of Peret, day 5. Work of (2) this day in the tomb: (3) The mason Teti smoothed/outlined (4) 2 *dni*. Hepyhersaef cut (5) ½ *dni*. Sennefer repaired/reconstructed (6) ... cubits in the doorway/front hall/chamber. (7) The scribe Imhotep applied a hard surface (background) (8) 20 cakes (of) colour. Completed.

Verso - (1) The scribe Amunnu: 20 cakes. (2) 1 Nubian delivered plaster; (3) 3 jars. 1 Nubian (4) delivered water; 3 jars. (5) Beshau stopped/delayed (6) because of the planks/boards

O. 64 *Recto* - (1) Month 4 of Peret, day 5. Work (2) in the tomb: (3) Teti smoothed/outlined [2 *dni*]. (4) Hepyhersa[ef cut ½ *dni*]. (5) Sennefer [repaired/reconstructed ...] cubits. (6) The scribe I-[mhotep] applied a hard surface; (7) [20 cakes]. Amunnu; 20 cakes. Completed.

Verso - (1) 2 [men] delivered pla- (2) [ster]; 3 jars. Water: (3) 3 jars. (4) Beshau stopped/delayed (5) (but) caused to be brought to us (6) 2 planks/boards and 2 poles/beams(?) of (7) Acacia.

O. 65 (1) Month 4 of Peret, day 25. [Work of this day:] (2) The reinforcer(?) Sennefer [C...?] (3) 5 *dni*. Completed. Beshau delivered (4) plaster; 2 jars. Teti (5) cut 2 *dni*. Ihay (6) (and(?)) 3 men delivered plaster; (7) 3 jars.

O. 66 (1) [...] (2) in the doorway/front hall/chamber [...] [work] (3) of this day: splitting/opening [...] (4) one part [...] stacked/stored [...] (5) colour [...] every/all; cakes [...] (6) Sennefer [...] in the] (7) doorway/front hall/chamber of the rs(?) (8) 12 *dni*. B[eshau...] (9) 1 *dni*. Teti [...]

O. 67 (1) [...] first occasion. The [...] (2) [...] mason Teti cut [...] (3) [...] passage to the back part [...] (4) [...] 1½ *dni*. The mason [...] (5) [...] cut(?) ...]

O. 68 (1) [...] day 13. This day in the [...] (2) [...] Teti (and) the mason [...]

- O. 69** (1) Month 4 of Akhet. List of the work of the corvée of servants (2) who came with the priest on this day: 11 *nbi*. The mason Hepy[her]- (3) -saef (? *dni*). The mason Beshau: 1 *dni*. The ‘shorer’ Sennefer built/smoothed (4) 1 *dni*. 6 cubits.
- O. 70** (1) Month 2 of Peret, day 12. (2) Receiving the work of (3) the tomb by the scribe (4) Nebamun from the scribe User until day 28. (5) Documents (handed over); 6. The new land/island: 3. (6) The department of the temple: 3. Total: 6.
- O. 71** (1) Month 2 of Akhet, day 19. (2) Giving work to (3) 3 men.
- O. 72** (1) Month 2 of Peret, day 20. Work done this day in (2) the tomb: [...]
- O. 73** (1) Month 2 of Peret, day 26. [...] (2) (tomb?) on this day. Work (?) [...] (3) 15 men did [...] *nbi* (4) 5 men did [...] *nbi* [...] men] (5) did 5 *nbi*. [...] men [...] (6) who are in charge / under the authority of the watchman (?) [...] (7) Beshau cut [...]
- O. 74** (1) Month 1 of Akhet, day 28. Beginning of work (2) by the mason Beshau in the (3) northern passage, which is in hard rock. (4) In its southern side: 4 cubits (cubic?) (5) by work of the mason Teti.
- O. 75** (1) Month 4 of Akhet, day 20. Placing the mason (2) Beshau to work in the doorway: (3) Amount of his work which is in the doorway: (4) 3 *nbi* in its width, 7 *nbi* in (5) its height, its depth 3 cubits, making [...]
- O. 76** (1) The work of Kay: the [...] (2) width 2 cubits, depth 2 cubits [...] (3) by 7 cubits. The other work (?) [...] (4) 5 cubits, depth 4 cubits, by (5) 7 cubits.
- O. 77** (1) Month 2 of Shemu, day [...] (2) day wo[rk(?) ...] (3) in the [hall(?) ...] (4) those who [...] (5) men [...]
- O. 78** Part of a satirical poem about the work. See Hayes (1942), 23.
- O. 79** Badly preserved second version of the previous ostrakon. See Hayes (1942), 23.
- O. 80** (1) Year 11, month 3 of (2) Akhet, day 27. Open- (3) ing the door of the (4) [...] “Mayet” (?)

- O. 81** (1) [...] (2) plans/conduct of Djehuti [the] Follower (3) then he shall go to bring the (4) people.
- O. 82** (1) Month 3 of Peret, day 6. Report of the ...
- | | | | |
|------------------------|---------|----------|----------|
| (2) [...]: | [...]: | [...]: | [...] |
| (3) Scribe Ahmose | idem 2 | idem ... | idem 1 |
| (4) Stonecutter Ahmose | idem 2 | idem 2 | idem 1 |
| (5) Shakar | idem 2 | idem 2 | idem 1 |
| (6) Scribe Nedjemmut | idem 1 | idem 1 | idem ... |
| (7) The stonecutters | idem 8 | idem 8 | idem 1 |
| (8) The stonecutters | idem 10 | idem 8 | 'absent' |
| (9) The ... work: 17 | | | |
- O. 83** (1) The steward: (2) 21 men. (3) The vizier: 7 men. (4) The town of Neferusy: (5) 23 men. (6) Scribe Hori: (7) 5 men. (8) Total: 56 men.
- O. 84** (1) Month 3 of Peret, day 18. Name list of (2) the people that are under the authority of Amenemhat
- O. 85** (1) The first prophet of (2) the bark Weserhat (3) Senmen. (4) 13 stonecutters (5) Mahu (6) The absent ones ...
- O. 86** (1-5) [...] (6) [...]: 1 (7) Soldiers: 4 (8) Woodcutters: 10 (9) Fishers: 8 (10) Total: 39
- O. 87** (1) List of the Followers (2) of the god who [...] (3) this day: Follower Kuy (4) Follower Amenhotep (5) Follower Ita [...] (6) Follower Teti (7) Follower Neferhebuef (8) Follower Amenhotep (9) The stonecutter Dja-[...]
- O. 88** (1) [...] -ka (2) (Follower (?)) Thutmose (3) [...] -y (4) (Amu)n-Neb (5) (Neb (?)) -Netjeru (6) [...] -y (7) [...] -Khonsu (8) Pennebu (9) Penirynebu (10) Penmehen (11) Pentuewa [...] (12) Ka-n (13) Sanebi (14) Huy
- O. 89** (1) [...] -shed (2) Inishayt (3) Kener (4) Roy (5) His brother, Huy (6) Sauhat (7) Kenernebi (8) Rem (9) Aanaau (10) Hekaemsasen (11) [...] -r (12) [...] -t
- O. 90** (1) Month 1 of Shemu, day 16. Amennekhu [...] (2) Peniayt: 90 (3) Innu: 60 (4) Month 1 of Shemu, day 19. Those who were in the [...] (5) [...]

- O.91** (1) Teti: bread: 50 loaves; snw bread: 1 jar (2) Ahmose: bread: 200 loaves; snw bread: 2 jars (3) Fodder: 5 measures; Clothing: 1 item.
- O.92** (1) Hori: *Meded* (wine jar): (2) 1 cup (3) Khaka: $\frac{1}{2}$ (4) Djehutynakht: $\frac{1}{2}$ (5) Tetiresu: 1
- O.93** *Recto* - (1) Account of Amenemhat (2) ...et-neferet: 30 (3) [...]: 350
Verso - (1) Leek, large bundle (2) Idem: 10 handfuls (3) [...]
- O.94** (1) Hesiferneheh (2) Weshem beer jars: 2 of / for beer (3) Bread: 100
- O.95** (1) [...] (2) Exact cord: 1 (3) Cedar wood: 1
- O.96** (1) [...]: 10 (2) [...] 10. Bread: 1 (3) Brought by Djehutyemhat [...] (4) [...]second grade: 8; ordinary: 20 [...] (5) Brought by the man of the magazine: 200 (6) Total: beer: 6 mni.t jars; [...] 2. Premium beer: ...
- O.97** (1) A coming which did (2) the scribe Djeserka to (3) see ...
- O.98** (1) Month 3 of Peret, day 20
- O.99** (1) Month 4 of Peret, day 3, Ahmose
- O.101** (1) Day 21: Iry
- O.103** (1) Month 2 of Shemu (2) Iby
- O.106** (1) Month 2 of Shemu, day 26: Shaa
- O.107** (1) Iretamun
- O.108** (1) Mahu, bread: 1
- O.109** (1) Sendjehuty
- O.110** (1) Isenby
- O.111** (1) Dyenamun
- O.112** (1) Qaha
- O.113** (1) Iterem [...]
- O.114** (1) Ahmose (2) Ahmosepoker
- O.115** (1) Ahmose (2) Minmose
- O.116** (1) Ba'alka
- O.117** (1) Masons [...]
- O.118** (1) 4 cubits
- O.119** (1) 4 cubits (in?) height, day 29
- O.120** (1) 2 cubits
- O.121** (1) Kenamun
- O.122** (1) Amennakht
- O.123** (1) Sehtyibhor
- O.130** (1) The scribe Djehutymose called Teye (2) ... the scribe Teye ascended (3) ...
- O.131** (1) [...] (2) Overseer of Ships: 300 men (3) [...] (the Steward of (?)) the King's Wife: 200 (4) [...] 170 (5) [...]the god: 100 (6) [...] (Overseer of (?)) craftsmen: 20 (7) [...] (men (?)) [...]

O.MMA Field no. 27057.3 – Hayes 1960 no. 12

Recto - (1) Report of the 10 (2) draftsmen of the scribe (3) Paint cakes: 5 for [...] (4) Day and night (?) (5) with [...]

Verso - (1) Further, those of the crew (2) of Djaseru (temple of Hatshepsut) did the same (3) in the city.

O.MMA Field no. 27057.2 – Hayes 1960 no. 13

Recto - (1) Regnal year 16, month 1 of Akhet day 8. Distribution of the servants of (2) Senenmut between 2 chiefs. Those who are under the authority of Ipuwer: (3) Foreman May until Month 1 of Akhet, day 11 (4) Foreman Dyefdjeref: idem (5) Mose: idem (6) Miny: idem (7) Shemkher: idem (8) Amenemhat: total 6: idem

Verso - (1) Those who are under the authority of Milbenrekhy (2) Foreman Amenemhat (3) Foreman Yarsenu (4) Gardener Amenhotep (5) [...]aa (6) Bu-[-]-k-[-] (7) iyn [...] total: 6 (8) Month 1 of Akhet, day 7: brought by the gardener Amenhotep (9) Combined total: 12 (10) Those who are at the storeroom of Senenmut: 12 (+ x?) servants (11) Those who are at the [...]

Recto - (9) Month 1 of Akhet, day 9 [...] scribe Baki (10) Those who came [...] on this day: (11) Tyerqet of the town of [...] (12) Medjatempupen (?) of the town of [...] (13) Teti of the town of Hermopolis (14) Senu of the town Wabru ? (15) Gamababa (16) Qenamun of Takhsi (17) Netjeruhotep of the prophet (18) Marater (19) The Nubian Qenamun (20) Yushay (21) Tewener (22) The servant of Qenyamun

O.MMA Field no. 27057.4– Hayes 1960 no. 14

Recto - (1) [...]: [...] 2 (2) [...]: idem: 2 (3) Senenmut: idem: 2 (4) House of the King's Wife: idem: 2 (5) Month 4 of Shemu: Senenmut: idem: 11 (6) idem: House of the King's Wife: idem: 3 (7) Idem: (overseer of) treasurer: idem: 4 (8) Idem: Pharaoh: idem: 1 (9) 5 epagomenal days: (overseer of) treasurer: idem: 2 (10) Idem: House of the King's Wife: idem: 2 (11) Month 1 of Akhet: Pharaoh: idem: 2 (12) House of the King's Wife: idem: 2 (13) Month 2 of Akhet: (overseer of) treasurer: idem: 10 (14) Idem: House of the King's Wife: idem: 4 (15) idem: Senenmut: idem: 2 (16) Total: (Overseer of the) Treasury: 19 (17) Senenmut: 19 (18) House of the King's Wife: 15 (19) Pharaoh: (not recorded)

Verso - (1) [...] what he brought: blades (?): 6 (2) Minmose: idem: 6 (3) Ramose: idem: 8 (4) Panehsy: idem: 5